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Minimum DB :
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Maximum Match 100%
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AAR91315
AAW06580
AAW89328
AAW89329
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AAM93202
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N. meningitidis Be
N. gonorrhoeae gly
Lipo-oligosacchari
Neisseria meningit
Neisseria meningit
Neisseria meningit
Human polypeptide
Human polypeptide,
Human polypeptide,
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AAR42241	AAR42240	AAR42239	AAR42238	AAR42237	AAR42236	AAR42235	AAR42234	AAR42088	ABG08255	AAW21023	AAY35171	AAU27796	AAB41784	ABB57176	ABG03682	AAU76669	ABB11417	AAB82459	AAE15943	AAY97423	AAB60321	AAY32543	AAB60317	ABG22090	AAW20604	ABP43477	AAB88452	AAM93427	AAB41900	ABB62795	ABP42016	AAB12121	(AAG81257
p50	- p50	p50	р 0	p50	p50	p50	p50 pro		Novel human diagno	lori cytopla	ĵ.		_		Novel human diagno	Helicobacter pylor		Caenorhabditis ele		Rice 1-deoxy-D-xyl	licobacter pylo	H. pylori beta-1,4	Helicobacter pylor	Novel human diagno	lori cytor	secreted		Human polypeptide,		 Drosophila melanoq 	Human ovarian anti	phobic don	secreted	Human AFP protein

ALIGNMENTS

RESULT 1

(ARR91312)

(ARR91312)

AC AAR91312;

AC AAR91312;

AC AAR91312;

XX

DT 09-JUL-1996 (first entry)

XX

DT 09-JUL-1996 (first entry)

XX

CA AAR91312;

XX

N. gonorrhoeae glycosyltransferase Lgt

XX

KW Glycosyltransferase; lipo-oligosacchar

KW vaccine.

XX

OS Neisseria gonorrhoeae strain F62.

XX

OS Neisseria gonorrhoeae strain F62.

XX

PN W09610086-A1.

XX

PD 04-APR-1996.

XX

PP 25-SEP-1994; 95WO-US12317.

XX

PR 26-SEP-1994; 94US-0312387.

XX

PR 26-SEP-1995; 95WO-US12317.

XX

PR 26-SEP-1994; 94US-0312387.

XX

PR 26-SEP-1995; 95WO-US12317.

XX

PR 2 Glycosyltransferase; lipo-oligosaccharide; lgt gene; LOS locus; vaccine. N. gonorrhoeae glycosyltransferase LgtB.

Nucleic acids encoding glycosyl transferase(s) - used in the diagnosis of infection with Neisseria and for the biosynthesis oligo:saccharide(s)

of

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RESULT 2
AAY22156
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Best Local S
Matches 279
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         igth (AAR91312) can be obtd. by expression of the ligth coding sequence in recombinant host cells. A method for adding Gal betal-4 to GlcNAc or Glc comprises contacting a reaction mixture contg. activated Gal to an acceptor moiety comprising a GlcNAc or Glc residue in the presence of Ligth. Oligosaccharides can be produced that, when attached to non-toxic lipids, are useful for Neisseria vaccine prepn. Blood group core oligosaccharides, and mimics of lacto-N-neotetraose, gangliosides and saccharide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  5 Glycosyltransferases (AAT14061) of Neiserria
WPI; 1999-395174/33
                         Gilbert
                                                                                                                                                                                                                                                                                                                                 AAY22156;
                                                                                                                                                                                                                                        glycosyltransferase;
                                                                                                                                                                                                                                                    Beta-1,4-galactosyltransferase; lgtB;
                                                                                                                                                                                                                                                                               N. meningitidis Beta-1,4-galactosyltransferase
                                                                                                                                                                                                                                                                                                         08-SEP-1999
                                                                                                                                                                                                                                                                                                                                                          AAY22156 standard; Protein;
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                                                                          14-DEC-1998;
15-DEC-1997;
                                                                                                                15-DEC-1998;
                                                                                                                                         24-JUN-1999
                                                                                                                                                                 WO9931224-A2
                                                                                                                                                                                         Neisseria meningitidis.
                                                                                                                                                                                                                  carbohydrate
                                                                                                                                                                                                                              saccharide donor; oligosaccharide synthesis;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     portions of globoglycolipids can also be produced using the enzymes.
                                                (CANA ) NAT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     VEKACFMSHAVLMEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQERFDPDSAFVVR 120
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llarity 100.0%;
Conservative
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                                                                                                                                                                                                                                                                                                        (first entry)
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                                                                        98US-0211691.
97US-0069443.
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                                                COUNCIL CANADA.
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                                                                                                                                                                                                                                          accessory
                       Æ,
                                                                                                                                                                                                                development.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  (AAR91311-15) are products of the 1gt locus gonorrhoeae strain F62. Glycosyltransferase
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        English.
                       Young NM;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Score 1461; DB 17;
Pred. No. 4.6e-159;
; Mismatches 0;
                                                                                                                                                                                                                                          enzyme;
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                                                                                                                                                                                                                                          fusion protein; catalytic domain;
; nucleotide sugar formation;
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04-APR-1996

WO9610086-A1

Neisseria gonorrhoeae strain F62

25-SEP-1995;

95WO-US12317

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Concal Similarity
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                                                                                                                             Glycosyltransferase; vaccine.
                                                                                                                                                                                                                                                                           AAR91315 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               polypeptide allows two glycosyltransferase reactions in a single vessel, provides improved yields of end products. Additionally, cleanup and disposal of extra solvents and by-products is reduced. The fusion protein can also use directly different donor analogues and various acceptors
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Carbohydrates are involved in recognition elements on the surface of cells. The fusion protein can be used for the synthesis of both natural carbohydrates and synthetic derivatives with novel properties. The fusion polypeptide allows two glycosyltransferase reactions in a single vessel,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          The fusion proteins are able to catalyse more than one reaction in the enzymatic synthesis. This is useful for the development of therapeutic agents that have specific carbohydrate structures.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             accessory enzyme that is involved in formation of a nucleotide sugar which is a saccharide donor for a glycosyltransferase reaction. The fusion protein is useful in the enzymatic synthesis of oligosaccharides
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          galactosyltransferase (also referred to as 1gtB). The invento a nucleic acid encoding a fusion protein that comprises
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          A new glycosyltransferase fusion synthesis of oligosaccharides
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                                                                                                                                                                                                                                                                                                                                                                                          PANTFKHRLIRALTKIGREREKRRQRREQLIGKIIVPFQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LETMFMHVLTSPSGVADYCGRAFPLLESEHWGTAGYIISRKAMRFFLDRFAALPPEGLHP
                                                                                                                                                                                                                                                                                                                                                                                                                       VDLMMFSDFFDREGMPVCQLNPALCAQELHYAKFHDQNSALGSLIEHDRLLNRKQQRRDS
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                                                                                                                                                                                                            (first entry)
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  90.0%;
                                                                                                                                            lipo-oligosaccharide;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Score 1288; DB 20;
Pred. No. 3.4e-139;
7; Mismatches 17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         protein useful
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                                                                                                                                            gene;
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                                                                                                                                              locus;
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Best Local S
Matches 209
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                                                                        Polyglycosyltransferase; N-acetylglucosaminyl transferase; N-acetylgalactosaminyl transferase; lipo-oligosaccharide.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LgtE (AAR91315) can be obtd. by expression of the lgtE coding sequence in recombinant host cells. A method for adding Gal
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                5 Glycosyltransferases (AAR91311-15) are pr (AAT14061) of Neiserria gonorrhoeae strain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Claim 12;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                diagnosis of infect:
oligo:saccharide(s)
 19-DEC-1996
                         WO9640971-A1
                                                                                                                 Lipo-oligosaccharide
                                                                                                                                           21-MAR-1997
                                                                                                                                                                    AAW06580;
                                                                                                                                                                                             AAW06580 standard;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Nucleic acids encoding
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              26-SEP-1994;
                                                 Neisseria gonorrhoeae ATCC 33084
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Sequence
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                                                                                                                                                                                                                                                                                    PANTFKHR--
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                                                                                                                                                                                                                                                                                                                                                                                                                              VEKACEMSHAVLWEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQEREDPDSAFVVR
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)B; AAT14061.
                                                                                                                                                                                                                                                           ----RHRRSLKVMFDLKRALGKFGREKKKRMERQRQAELEKVYGRRVILFK
                                                                                                                                                                                                                                                                                                           VDLMMFTYFFDKEGMPVYQVSPALCTQELHYAKFLSQNSMLGSDLEKDREQGR----
                                                                                                                                                                                                                                                                                                                                                             LETMFAKVIVRPDKVLNYENRSFPLLESEHCGTAGYIISREAMRFFLDRFAVLPPERIKA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       209;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        280 AA;
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                                                                                                                                                                                          Protein;
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                                                                                                                                                                                                                                                                                -LIRALTKIGREREKRRORR-----EQLIGKIIVPFQ
                                                                                                              gene-encoded protein
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      24;
                                                                                                                                                                                             280 AA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Score 1036.5; DB 1
Pred. No. 2.8e-110;
4; Mismatches 34;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            products of the 1gt locus
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              DB 17;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Transfer of at least 2 saccharide units using poly:glycosyl:transferase - isolated from N. gonorrhoeae, the addition of both GlcNac and GalNac di:saccharide(s) un
                                                              Neisseria meningitidis
                                                                                    glycosyltransferase;
                                                                                             Neisseria meningitidis; lgtC; lgtB; beta-1,4-galactosyltransferase;
                                                                                                                   Neisseria meningitidis lgtB
                                                                                                                                          26-FEB-1999
                                                                                                                                                             AAW89328;
                                                                                                                                                                                     AAW89328
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                 Local Sinhes 209;
                                                                                                                                                                                                                                                                                                                                                                          61 VEKACEMSHAVLWEQALDEGLPYIAVFEDDVLLGEGAEQFLAEDTWLEERFDKDSAFIVR
                                                                                                                                                                                                                                                                                                                                                                                                 61
                                                                                                                                                                                                                                                                                                                                                                                                                   LETMFMHVLTSPSGVADYGGRAFPLLESEHCGTAGYIISRKAMRFFLDRFAVLPPERLHP
                                                                                                                                                                                                                                                                                                                                                                                    VEKACFMSHAVLWEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQERFDPDSAFVVR
                                                                                                                                                                                                                                                             PANTFKHR-----LIRALTKIGREREKRRORR-----EQLIGKIIVPFQ
                                                                                                                                                                                                                                                                                   VDLMMFTYFFDLEGMPVYQVSPALCTQELHYAKFLSQNSMLGSDLEKDREQGR----
                                                                                                                                                                                                                                                                                                                              LETMFAKVIVRPDFVLNYENRSFPLLESEHCGTAGYIISREAMRFFLDRFAVLPPERIKA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity
                                                                                                                                                                                   standard;
                                                                                                                                                                                                                                        -RHRRSLKVMFDLKRALGKFGREKKKRMERQRQAELEKVYGRRVILFK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 the specification
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Fig 2F-H;
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                                                                                                                                                                                   peptide;
                                                                                   proteolytic enzyme
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        KF,
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                                                                                                                  C-terminal peptide
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Pred. No. 1.1e
23; Mismatches
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1.1e-109;
hes 35; I
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98WO-IB00975

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Best Local
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Expressing high levels of glycosyltransferases either host cells deficient in proteolytic enzy
                                                                                   WPI; 1999-035177/03.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Neisseria meningitidis; lgtC; lgtB; beta-1,4-galactosyltransferase; glycosyltransferase; proteolytic enzyme;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    present sequence represents a C-reminate periode meningitidis 1gtB from the present invention.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         glycosyltransferase genes deleted
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                                                                                                                                                                                                                                                                                                            26-MAY-1998;
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                                                                                                                                                                                           (CANA ) NAT
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                                                                                                                                                                                                                                                     97US-0047751.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  peptide;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               15.0%;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Score 219; DB 2
Pred. No. 2e-17;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        ₿
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Mismatches
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     enzymes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            20;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        4.
  comprises use
s or modified
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Neisseria
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                            of.
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EHDRLLNRKQQWRDSPANTFKRRLIRALTKISREREIRRQRREQ----FIVPFQ

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Matches
                                                                                                 Query Match
                                                                                                                                                                                                                                                   A method has been developed of expressing a glycosyltransferase in a host cell. The method comprises introducing into the host cell a nucleic acid encoding the glycosyltransferase and incubating the host cell under conditions appropriate for expression of the glycosyltransferase, where the host cell substantially lacks a protease that cleaves polypeptides between two consecutive positively charged amino acid residues. The glycosyltransferase can be used in in vitro production of oligosaccharide structures which are potential therapeutic agents for use in the manipulation of cell-cell recognition events, particularly adhesion of bacteria and viruses to mammalian cells and leukocytenendothelial cell interaction through selectins in inflammation. The
                                                                                                                                       Sequence
                                                                                                                                                                                               method provides more readily recoverable active glycosyltransferases than prior art methods involving mammalian glycosyltransferases. The present sequence represents a C-terminal peptide from Neisseria
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     glycosyltransferase genes deleted
                                                                                                                                                                            meningitidis lgtB
226 EHDRRLNRKQQWRDSPANTFKHRLIRALTKIGREREKRRQRREQLIGKIIVPFQ
                                                                      Local
                                                          1 Similarity
45; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1; Fig 8;
                                                                                                                                         50 AA;
                                                          Conservative
                                                                                                                                                                            from the present invention.
                                                                        14.9%;
                                                      Score 217; DE Pred. No. 3.4e 0; Mismatches
                                                          0
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       a proteolytic recognition site
                                                      DB 20;
.4e-17;
les 5;
                                                                                           Length 50;
                                                        Indels
                  279
                                                      4.
                                                      Gaps
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ABB89453 WO200190304-A2 vulnerary; anticonvulsant; antiallergic; Cytostatic; Homo sapiens. neurological Human polypeptide 24-MAY-2002 ABB89453 ABB89453 standard; Protein; 423 gene immunosuppressive; nootropic; c; hepatotropic; antidiabetic; anticonvulsant; antibacterial; disease; (first entry) therapy; SEQ ID NO 1829 infection; human; secreted protein. cancer; ₿ disorder; antiinflammatory; antiulcer; antifungal; antiparasitic; neuroprotective; antiviral; cardiovascular disorder;

29-NOV-2001

18-MAY-2001; 2001WO-US16450

19-MAY-2000; 2000US-205515P

HUMAN GENOME SCI INC

Birse CE, Rosen CA

N-PSDB; WPI; 2002-122018/16 ABL89862.

Novel 1405 isolated polypeptides, useful for diagnosis, prevention of neural, immune system, muscular, reproduct gastrointestinal, pulmonary, cardiovascular, renal and pdisorders. reproductive, proliferative treatment and

Claim 11; SEQ ID NO 1829; 2081pp + Sequence Listing; English.

The invention relate (ABB89040-ABB90444) relates to es to novel genes (ABL89449-ABL90853) useful for preventing, treating or an ameliorating

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AAB41790
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cc isolated from a range of human tissues disclosed in the specification. Cc The nucleic acids, proteins, antibodies and (ant)agonists are useful cc in the diagnosis, treatment and prevention of: (a) cancer, e.g. breast can ovarian cancer and other cancers of the adrenal gland, bone, bone marrow, breast, gastrointestinal tract, liver, lung, or urogenital; cc (b) immune disorders e.g. Addison's disease, allergies, autoimmune cc haemolytic anaemia, autoimmune thyroiditis, diabetes mellitus, Crohn's cd disease, multiple sclerosis, rheumatoid arthritis and ulcerative cc colitis; (c) cardiovascular disorders such as myocardial ischaemias; (d) wound healing; (e) neurological diseases e.g. cerebral anoxia and ce pilepsy; and (f) infectious diseases such as viral, bacterial, fungal can dispassitic infections.

Cc Note: The sequence data for this patent did not form part of the crim wipo at ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Matches
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Best Local
                                                                                                                                                                                                                           Human; open reading frame; ORFX; detection; cytostatic; hepatotropic; vulnerary; antipsoriatic; antiparkinsonian; nootropic; neuroprotective; anticonvulsant; osteopathic; antiarthritic; immunosuppressant; cardiant; immunostimulant; thrombolytic; coagulant; vasotropic; antidiabetic; hypotensive; dermatological; immunosuppressive; antiinflammatory; antiviral; antibacterial; antifungal; antimheumatic; antithyroid; antianaemic; gene therapy; cancer; proliferative disorder; hypertension; neurodegenerative disorder; osteoarthritis; graft vs host disease; cardiovascular disease; dlabetes mellitus; hypothyroidism; SCID; AIDS; cholesterol ester storage; systemic lupus erythematosus; infection; severe combined immunodeficiency; malaria; autoimmune disorder; asthma; allergy; aplastic anaemia; nocturnal haemoglobinuria; burn; wound; allergy; aplastic anaemia; nocturnal haemoglobinuria; burn; wound;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Human ORFX ORF1554 polypeptide sequence SEQ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     AAB41790 standard; Protein; 517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               medical conditions isolated from a rar The nucleic acids,
                                                             05-OCT-2000
                                                                                                     WO200058473-A2
                                                                                                                                                                                       bone damage; cartilage dam thrombosis; contraceptive.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   08-FEB-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Sequence
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           155 VISLARRPDRRERMLASLWEMEISGRVVDAVDGWMLNSSAIRNLGVDLLPGYQ-DPYSGR 213
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    58
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               GARKLLASQPLRRMLPVDEFLPIMFDQHPNEQYKAHFWPRDLVAFSAQPLLAA-PTHYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         TLTKGEVGCFLSHYSIWEEVVARGLARVLVFEDDV------RF--ESN
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LDR--FAVLPPERLHPVD----LMMFGNPDDR-----EGMPVCQLNPALCAQELHYA 212
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FVVRLETMEMHVLTSP-SGVADYGGR--AFPLLESEHCGTAGYIIS-----RKAMREF 166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   FRGRLERLMEDVEAEKLSWDLIYLGRKQVNPEKETAVEGLPGLVVAGYSYWTLAYALRLA
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     65;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       423 AA;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Conservative
                                                                                                                                                                                                              cartilage damage;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     8.98;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 by protein or gene therapy. The genes are human tissues disclosed in the specification.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   30;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Score 129.5; DB 2
Pred. No. 9.3e-06;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ID NO:3108.
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31-MAR-2000; 2000WO-US08621

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RESULT 9
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Best Local
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02-APR-1999;
05-APR-1999;
30-MAR-2000;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              antithyroid; and antianaemic. The sequences can be used for determining pathological conditions associated with an ORRY-associated disorder. The nucleic acids can be used to express ORRY proteins in gene therapy vectors. The proteins and nucleic acids may be used to treat cancers, proliferative disorders, neurodegenerative disorders, osteoarthritis, graft vs host disease, cardiovascular disease, diabetes mellitus, hypothyroidism, cholesterol ester storage, systemic lupus erythematosus, severe combined immunodeficiency (SCID), AIDS, viral, allergies, aplastic anaemia, burns, wounds, bone and cartilage damage, nocturnal haemoglobinuria, antiinflammatory disease; to enhance coagulation; to inhibit thrombosis; and as a contraceptive.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            antipsoriatic; antiparkinsonian; nootropic; neuroprotective; osteopathic; anticonvulsant; antitarthritic; immunosuppressant; immunostimulant; cardiant; thrombolytic; coagulant; vasotropic; antidiabetic; hypotensive; dermatological; immunosuppressive; antidiabetic; hypotensive; dermatological; immunosuppressive; antifilammatory; antibacterial; antiviral; antifungal; antirhections antiparticular antifungal; antirhections antiparticular ant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             AAC74446 to AAC77606 encode the proteins given in AAB40237 to AAB43397, which represent the human ORFX open reading frames 1 to 3161. The ORFX sequences have activities such as: cytostatic; hepatotropic; vulnerary;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Novel nucleic acids and peptides derived from open reading useful for treating e.g. cancers, proliferative disorders, neurodegenerative disorders and cardiovascular disease -
                     Human polypeptide, SEQ ID NO:
                                                                              06-NOV-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Claim 11; Page 2331-2332; 5507pp; English
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                                                                                                                                    AAM93202;
                                                                                                                                                                                              AAM93202 standard; Protein; 517
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Sequence
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TLTKGEVGCFLSHYSIWEEVVARGLARVLVFEDDV--
                                                                                                                                                                                                                                                                                                                                         GARKLLASQPLRRMLPVDEFLPIMFDQHPNEQYKAHFWPRDLVAFSAQPLLAA-PTHYA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               -LSGVEKACFMSHAVLWEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQERFDPDSA 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        VISLARRPDRRERMLASLWEMEISGRVVDAVDGWMLNSSAIRNLGVDLLPGYQ-DPYSGR 304
                                                                                                                                                                                                                                                                                                                                                                                               LDR--FAVLPPERLHPVD----LMMFGNPDDR-----EGMPVCQLNPALCAQELHYA 212
                                                                                                                                                                                                                                                                                                                                                                                                                                                         FRGRLERLMEDVEAEKLSWDLIYLGRKQVNPEKETAVEGLPGLVVAGYSYWTLAYALRLA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  FVVRLETMFMHVLTSP-SGVADYGGR--AFPLLESEHCGTAGYIIS-----RKAMRFF 166
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           65;
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; 99US-0127636.
; 99US-0127728.
; 2000US-0540763.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Conservative
                                                                           (first entry)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Leach
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              AA;
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Pred. No. 1.3e-05;
                        2591
                                                                                                                                                                                              3
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Length 517;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           RF--ESN 344
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           53;
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AAM93206
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Eest Local Similarity
Matches 65; Conserv
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    molecules have been determined. Primers for synthesising the full length CDNA are useful for clarifying the function of the protein encoded by the cDNA. The full length clones were obtained by construction of full length enriched cDNA libraries that were synthesised by the oligo-capping method. The primers enable the production of the full length cDNA easily without any special methods. The present sequence is a polypeptide encoded by a full length human cDNA of the invention. Note: The sequence data for this patent did not form part of the printed specification, but was obtained in CD-ROM format directly from EPO.
                 Human polypeptide,
                                                        06-NOV-2001
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11-JAN-2000;
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Nagai K, Kojima
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Pred. No. 1.3e-05;
Pred. Mismatches 91;
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Best Local Similarity
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               Human AFP protein sequence
                                                    10-SEP-2001
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           The invention relates to primers for synthesising full length clones. 830 cDNA molecules encoding a human protein have been
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   830 Primers useful for synthesizing full length cDNA use in genetic manipulation -
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11-JAN-2000;
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                                                                                                                                                                                                                                                           LDR--FAVLPPERLHPVD----LMMFGNPDDR-----EGMPVCQLNPALCAQELHYA 212
                                                                                                                                                                                                                                                                                                  FRGRLERLMEDVEAEKLSWDLIYLGRKQVNPEKETAVEGLPGLÝVAGYSYWTLAYALRLA 404
                                                                                                                                                                                                                                                                                                                                     FVVRLETMEMHVLTSP-SGVADYGGR--AFPLLESEHCGTAGYIIS-----RKAMRFF 166
                                                                                                                                                                                                                                                                                                                                                                            TLTKGEVGCFLSHYSIWEEVVARGLARVLVFEDDV---
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a T, Nagai K, Kojima
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               SEQ ID NO:32
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Pred. No. 1.3e-05;
"" matches 91;
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Ishii S, S, Otsuki

Kawai T, Ko

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Secreted protein; prevention; treatment; protein therapy; gene therapy; diagnosis; cancer; tumour; neurodegenerative disorder; blood disorder; developmental abnormality; fetal deficiency; leukemia; autoimmune; acne
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       Claim
                                                               Human
                                                                                             12-OCT-1999
                                                                                                                           AAY30812;
                                                                                                                                                      AAY30812 standard;
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55; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                          53;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Gaps
                                                                                                                                                                                                                                                                                          482
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Best
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09-FEB-1998;
09-FEB-1998;
09-FEB-1998;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               This invention describes novel isolated human genes and the secreted proteins they encode. The polynucleotides and their corresponding secreted polypeptides are useful for preventing, treating or amelioratin medical conditions e.g. by protein or gene therapy. Also pathological conditions can be diagnosed by determining the amount of the new polypeptides in a sample or by determining the presence of mutations in the new polynucleotides. Specific uses are described for the polynucleotides of the invention based on which tissues they are most highly expressed in, and include developing products for the diagnosis of treatment of cancer, tumours, neurodegenerative disorders, developmental abnormalities and fetal deficiencies, blood disorders, leukemias,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Kyaw H,
Shi Y,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                               diseases of the immune system, autoimmune diseases, hepatic and renal disease, lymphomas, inflammation, allergies, Alzheimer's and cognitive disorders, schizophrenia, obesity, osteoporosis, arthritis, infections AIDS, connective tissue disorders, transplant rejection, diabetes, asthma, sepsis, acne, psoriasis, cardiovascular disorders, and
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     hepatic disease; renal disease; lymphoma; inflammation; allergy; as Alzheimer's disease; cognitive disorder; schizophrenia; obesity; se osteoporosis; arthritis; infection; AIDS; connective tissue disorder transplant rejection; diabetes; psoriasis; cardiovascular disorder; reproductive disorder; food additive; food preservative; human; pri
                                                                                                                                                                                                                                                                                                                                                                                    reproductive disorders. The polypeptides or polynucleotides can also used as food additives or preservatives. The polypeptide are also use for identifying their binding partners. This sequence represents a secreted protein described in the invention.
                                                                                                                                                                                                                                                                                                                                           Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Claim 1b;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     New isolated human genes potentially abnormalities and fetal deficiencies
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  117
                                                  383
                                                                                                                                             324
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                                                                                                                                                                                                                                                                    Local
                                                                                                                                                                                        5 VISLASAAERRAHIAATFGSRGIPFQFFDA----LMPSERLERAMAELVPGLSAHPY---
                                                                         -LSGVEKACFMSHAVLWEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQERFDPDSA 116
|: | ||:|| :||: ||: |||||||
FVVRLETMEMHVLTSP-SGVADYGGR--AFPLLESEHCGTAGYIIS-----RKAMRFF 166
                                                TLTKGEVGCFLSHYSIWEEVVARGLARVLVFEDDV
                                                                                                                                           VISLARRPDRRERMLASLWEMEISGRVVDAVDGWMLNSSAIRNLGVDLLPGYQ-DPYSGR 382
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Page 206-208; 263pp; English.
                                                                                                                                                                                                                                                                                                                                           579
                                                                                                                                                                                                                                           Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          98US-0074341.
98US-0074037.
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98US-0074157.
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                                                                                                                                                                                                                                                               8.9%;
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                                                                                                                                                                                                                                         30;
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Pred.
                                                                                                                                                                                                                                           Mismatches
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                                                                                                                                                                                                                                                               129.5;
No. 1.
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developmental
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sepsis;
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                                                         Query Match
Best Local Similarity
                                                                                                                                                                                  differentiation induction, the material transport and the biophylaxis of cells. Membrane proteins have important roles as signal receptors, ion channels and transporters. The present sequence is a human protein which has at least one hydrophobic domain. This protein may be a secretory or a membrane protein. The present protein may have cytokine and cell proliferation/differentiation activity, immune stimulating or suppressing activity, haematopoiesis activity, tissue growth activity, haemostatic activity, chemotactic/chemokinetic activity, haemostatic
                                                                                                   Sequence
                                                                                                                                                                                                                                                                                                        Secretory proteins play important roles in the proliferation control,
                                                                                                                                                                                                                                                                                                                                                                                             Proteins comprising hydrophobic regions, such as secretory and membrane proteins, useful in research and diagnostics and having various
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kato
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          biophylaxis; signal receptor; ion channel; transporter; immunostimulant; immunosuppressant; haematopolesis regulator; chemotactic; chemokinetic; haemostatic; thrombolytic; anti-inflammatory; tumour inhibition; autoimmune disease; Alzheimer's disease; Parkinson's disease; cancer.
                                                                                                                                            and thrombolytic activity, anti-inflammatory activity and tumour inhibition activity. The present protein could therefore be used for treatment of autoimmune disease, Alzheimer's disease, Parkinson's
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      17-NOV-1998;
22-DEC-1998;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     proliferation
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                                                                                                                                                                                                                                                                                                                                                                 hemostatic,
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                                                                                                                                                                                                                                                                                                                                                                               activities e.g. immunomodulatory,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 (PROT-)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                17-NOV-1999;
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27-APR-1999;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            483 GARKLLASQPLRRMLPVDEFLPIMFDQHPNEQYKAHFWPRDLVAFSAQPLLAA-PTHYA 540
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        167
5 VISLASAAERRAHIAATFGSRGIPFQFFDA----LMPSERLERAMAELVPGLSAHPY---
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  secreted protein;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               SAGAMI CHEM RES CENT
                                                                                                                                                                                                                                                                                                                                   Page 184-186; 410pp; English.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Kimura T;
                                                                                                                                  and cancer
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                                           8.9
nilarity 27.2
Conservative
                                                                                                   595 AA;
                                                                                                                                                                                                                                                                                                                                                                 thrombolytic
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99JP-0119299.
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98JP-0364315.
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                                             30;
                                           Score 129.5;
Pred. No. 1.5e
30; Mismatches
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                                                                                                                                                                                                                                                                                                                                                                            antiinflammatory, chemokinetic,
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                                    1.5e-05;
91;
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RESULT 14
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                          recombinant vectors and host cells comprising human ovarian antigen polynucleotides, antibodies against human ovarian antigens, and the use of ovarian antigen polynucleotides and polypeptides in diagnosing, treating, prognosing or preventing various ovary and/or breast-related disorders. Such conditions include ovarian cancer and breast cancer, and metastatic tumours of ovarian or breast origin, reproductive system disorders (e.g., infertility, disorders of pregnancy, anovulation,
                                                                                                                                                                                                                                                                                                  Isolated nucleic acid molecules encoding novel ovarian polypeptides, useful in the prevention, treatment and diagnosis of cancer (e.g. ovarian cancer), immune disorders, cardiovascular disorders and
                                                                                                                                                         The invention relates to 2175 novel human ovarian antigens (ABP41054-ABP43228) and to cDNAs encoding them (ABC54131-ABC56305), and also encompasses polypeptides 90% identical and polynucleotides 95% identical to the sequences of the invention. The invention additionally relates to
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Human; ovarian antigen; ovary; ovarian; breast; cancer; tumour; ovarian cancer; breast cancer; tumour; reproductive system disconfertility; pregnancy disorder; anovulation; polycystic ovary
                                                                                                                                                                                                                                                     Claim 11;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          07-JUN-2001; 2001WO-US18569.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                03-JAN-2002
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      gastrointestinal disorder; urinary system disorder; drug screening; gene therapy; chromosome mapping; forensic analysis; antibody preparation; cytostatic; immunomodulatory; neuroprotective
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          PCOS; ovarian cyst; dysmenorrhoea; endocrine disorder; inflammatory condition; immune disorder; blood disorder; cardiovascular disorder; respiratory disorder; neurologi
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               ABP42016
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                                                                                                                                                                                                                                                                                       neurological diseases
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)B; ABQ55093.
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                                                                                                                                                                                                                                                   English.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              neurological disorder;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  infection;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    RF--ESN 422
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 disorder;
                                                                     and
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polycystic ovary syndrome, disorders, infections (e.g.

ovarian cysts, and dysmenorrhoea),
., chlamydia, HIV, toxoplasmosis, a

endocrine

is

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RESULT 15
ABB62795
ID ABB62
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                                                                       WPI; 2001-656860/75.
N-PSDB; ABL06898.
                                                                                                                                                                                                                                        23-MAR-2000; 2000US-191637P
11-JUL-2000; 2000US-0614150
  New isolated nucleic acid genes from Drosophila and
                                                                                                                                                                                                                                                                                                                                                               27-SEP-2001.
                                                                                                                                                                                                                                                                                                                                                                                                              WO200171042-A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                      Drosophila melanogaster.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          pharmaceutical.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Drosophila melanogaster polypeptide SEQ ID NO 15177
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              26-MAR-2002
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vaginitis), immur
                                                                                                                                             Venter JC,
                                                                                                                                                                                                                                                                                                              23-MAR-2001; 2001WO-US09231
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Drosophila; developmental biology; cell signalling; insecticide
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             ABB62795;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          ABB62795 standard; Protein;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     and urinary system disorders. Ovarian antigen polypeptides and polynucleotides may also be used in screening for compounds w
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  respiratory disorders, neurological disorders, gastrointestinal disorders
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             blood-related disorders
                                                                                                                                                                                         (PEKE ) PE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       524 GARKLLASOPLRRMLPVDEFLPIMFDOHPNEOYKAHFWPRDLVAFSAOPLLAA-PTHYA 581
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       117
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                -LSGVEKACFMSHAVLWEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQERFDPDSA 116
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       FRGRLERLMEDVEAEKLSWDLIYLGRKQVNPEKETAVEGLPGLVVAGYSYWTLAYALRLA
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                                                                                                                                             Adams M,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              8.9%;
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                                                                                                                                             PWD,
detection reagent for detecting 1000 or more for elucidating cell signalling and cell-cell
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                                                                                                                                             Myers
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          insecticides, therapeutics and pharmaceutical drugs. The invention discloses genomic DNA sequences (ABL16176-ABL30511), expressed DNA sequences (ABL01840-ABL16175) and the encoded proteins (ABB57737-ABB72072).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   capable of detecting 1000 or more genes from Drosophila. The inven-
useful in developmental biology and in elucidating cell signalling
cell-cell interactions in higher eukaryotes for the development of
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          The invention relates to an isolated nucleic acid detection reagent capable of detecting 1000 or more genes from Drosophila. The invent
                                                                                                                                                                                                                                                                                                                                                                                            Sequence
                                                                                                                                                                                                                                                                                                                                                                                                                                 at ftp.wipo.int/pub/published_pct_sequences.
                                                                                                                                                                                                                                                                                                                                                                                                                                                 The sequence data for this patent did not form part of the printed specification, but was obtained in electronic format directly from
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Disclosure; SEQ ID NO 15177; 21pp + Sequence Listing; English
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            interactions
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                                                                                                                                                                                               58
                                                                                                                                                                                                                                                                  5 VISLASAAERRAHIAATFGSRGIPFQFFDAL----MPSERLERAMAELVPGLS---AHPY
                                                                           --YFRQNAVRILNQARNAAQYDLIYFGRKRLKEESEPAVENADNLVHAGYSYWTLGYVIS 1008
                                                                                                                VVRLETMEMHVLTSPSGVADYG----GRAFPLLESE----
---LQGALKLLAAKPLDKLIPVDEFLPLMFDRHPN 1040
                                      RKAMRFFLDRFAVLPPERLHPVD----LMMFGNPD 190
                                                                                                                                                        MTMGEIGCFLSHYNIWVMVRKQLKEVLILEDDI--
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Pred. No. 0.00038;
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US-08-701-191A-27
US-09-134-001C-3799
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US-08-964-268-6
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MONHVIS 	7	T 1 -312-387B-8 -312-387B-8 -312-387B-8 uence 8, Applicatient No. 554553 NERAL INFORMATION: GCESCH FILLE OF INVENTION TITLE OF INVENTION TO STATE: New Jers COUNTRY: USA ZIP: 07601 COMPUTER: IBM F OPERATION TYPE: F1 COMPUTER: IBM F OPERATION WIDE FILLING DATE: JUNCATION TELECTONEY JACKSON E REGISTRATION NUM REFERENCE/DOCKET TELEFAN: 201 TELEFAN: 201 TELEFAN: 201 TELEFAN: 201 TELEFANTION TELEFANTION TELEFANT: 201 TELEFANTION T	78.5 78.5 78.5 74.5 74.5 73.5 73.5 73.7 73.7 73.7 73.7 73.7 73
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APPLICANT: Gotschli
TITLE OF INVENTION:
TITLE OF INVENTION:
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INFORMATION FOR SEQ ID NO:
                                                                                                                                                                                                                                                                                                            ATTORNEY/AGENT INFORMATION:
NAME: Jackson Esq., David A.
REGISTRATION NUMBER: 26,742
REFERENCE/DOCKET NUMBER: 600
TELECOMMUNICATION INFORMATION:
TELEPHONE: 201 487-5800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release $1.0, Version
CURRENT APPLICATION DATA:
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APPLICATION NUMBER: (
FILING DATE: September
CLASSIFICATION: 536
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STATE: New Jersey
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       APPLICATION NUMBER: US/08/683,426
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                                                       LETMFMHYLTSPSGVADYGGRAFPLLESEHCGTAGYIISRKAMRFFLDRFAYLPPERLHP 180
VEKACFMSHAVLWEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQERFDPDSAFVVR
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OLIGOSACCHARIDES, AND GENES ENCODING
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Pred. No. 4.1e-160;
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Patent No. 5798233
PATENTAL INFORMATION:
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Best Local Similarity
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INFORMATION FOR SEQ ID NO:
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MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: Patentin Release #1.0,
CURRENT APPLICATION DATA:
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REGISTRATION NUMBER: 26,742
REFERENCE/DOCKET NUMBER: 600-
TELECOMMUNICATION INFORMATION:
TELEPHONE: 201 487-5800
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TITLE OF INVENTION: GLYCOSYLTRANSFERASES FOR BIOSYNTHESIS OF
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                                                                                                                                                                                                                                                                       TYPE: amino acids
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               LETMFMHYLTSPSGVADYGGRAFPLLESEHCGTAGYIISRKAMRFFLDRFAVLPPERLHP 180
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Pred. No. 4.1e-160;
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Best Local Similarity
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                                                                                                                                                                   Matches
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INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
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CURRENT APPLICATION DATA:
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                                                                                                                                                                                                                                                                                                                                                                                                                  CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
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PRIOR APPLICATION DATA:
APPLICATION NUMBER:
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TITLE OF INVENTION: GLI
TITLE OF INVENTION: OLI
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TOPOLOGY: linear
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REGISTRATION NUMBER: 26,742
REFERENCE/DOCKET NUMBER: 600-1-095B
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OPERATING SYSTEM: PC-DOS/MS-DOS
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OLIGOSACCHARIDES, AND GENES ENCODING THEM
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Pred. No. 4.1e-160;
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                                                                                                                                                                                                                                                                                  Query Match
Best Local Similarity
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INFORMATION FOR SEQ ID NO: 8:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               NAME: Jackson Esq., David A. REGISTRATION NUMBER: 26,742
REFERENCE/DOCKET NUMBER: 600-1-095
TELECOMMUNICATION INFORMATION:
TELEPHONE: 201 487-5800
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           SOFTWARE: Patentin Release #1.0, Version #1.25
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/09/333,412
FILING DATE: 15-Jun-1999
                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: 08/312,387 FILING DATE: July 7, 1994 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                CLASSIFICATION: <Unknown>
PRIOR APPLICATION DATA:
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MEDIUM TYPE: Floppy disk
VDLMMFGNPDDREGMPVCQLNPALCAQELHYAKFHDQNSALGSLIEHDRRLNRKQQWRDS
                                                                                                                                                 VEKACFMSHAVLWEQALDEGVPYIAVFEDDVLLGEGABQFLAEDTWLQERFDPDSAFVVR 120
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TITLE OF INVENTION: GLYCOSYLTRANSFERASES FOR BIOSYNTHESIS OF
                                                                                  LETMFMHVLTSPSGVADYGGRAFPLLESEHCGTAGYIISRKAMRFFLDRFAVLPPERLHP 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  NUMBER OF SEQUENCES:
                                                                 LETMFMHVLTSPSGVADYGGRAFPLLESEHCGTAGYIISRKAMRFFLDRFAVLPPERLHP
                                                                                                                                VEKACFMSHAVLWEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQERFDPDSAFVVR 120
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                                                                                                                                                                                                                                                                                                                                                                                               TYPE: amino acid
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TELEX: 133521
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Pred. No. 4.1e-160;
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INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
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NAME: Jackson ESG., David A.
REGISTRATION NUMBER: 26,742
REFERENCE/DOCKET NUMBER: 600-1-095
TELECOMMUNICATION INFORMATION:
TELEPHONE: 201 487-5800
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TITLE OF INVENTION: GLYCOSYLTRANSFERASES FOR BIOSYNTHESIS OF
TITLE OF INVENTION: OLIGOSACCHARIDES, AND GENES ENCODING THEM
NUMBER OF SEQUENCES: 12
                                                                                                                                                                                                                                                                                                                                                                                                                    MOLECULE TYPE: protein
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CORRESPONDENCE ADDRESS:
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                               241 PANTFKHR-----LIRALTKIGREREKRRORR-----EQLIGKIIVPFQ 279
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                                                                                 VDLMMFGNPDDREGMPVCQLNPALCAQELHYAKFHDQNSALGSLIEHDRRLNRKQQWRDS 240
                                                                                                                                                                                              VEKACFMSHAVLMEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQERFDPDSAFVVR 120
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                                                              VDLMMFTYFFDKEGMPVYQVSPALCTQELHYAKFLSQNSMLGSDLEKDREQGR----
                                                                                                                            LETMFMHVLTSPSGVADYGGRAFPLLESEHCGTAGYIISRKAMRFFLDRFAVLPPERLHP 180
----RHRRSLKVMFDLKRALGKFGREKKKRMERQRQAELEKVYGRRVILFK 280
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RESULT 7

RESULT 8 US-08-683-458-6

Sequence 6, Application US/08683458 Patent No. 5798233

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Sequence 6, Applica-
Sequence 6, Applica-
Patent No. 5705367

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Best Local Similarity 71.6%;
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INFORMATION FOR SEQ ID NO: SEQUENCE CHARACTERISTICS:
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TOPOLOGY: 11--
VOLECUT: 11--
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MEDIUM TYPE: Floppy disk
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                                                                                                                                                                                                                                                                                                                               121 LETMFMHVLTSPSGVADYGGRAFPLLESEHCGTAGYIISRKAMRFFLDRFAVLPPERLHP 180
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                                                             PANTEKHR------LIRALTKIGREREKRRQRR-----EQLIGKIIVPFQ 279
                                                                                                                        VDLMMFTYFFDXEGMPVYQVSPALCTQELHYAKFLSQNSMLGSDLEKDREQGR------
                                                                                                                                                                    VDLMMFGNPDDREGMPVCQLNPALCAQELHYAKFHDQNSALGSLIEHDRRLNRKQQWRDS 240
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Pred. No. 3.4e-111;
Prematches 34;
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              Sequence 6, Application US/08878360
Patent No. 5945322
GENERAL INFORMATION:
APPLICANT: Gotschlich, Emil C.
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Best Local S
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INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
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MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
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ADDRESSEE: Klauber & Jackson
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TITLE OF INVENTION:
TITLE OF INVENTION:
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REGISTRATION NUMBER: 26,742
REFERENCE/DOCKET NUMBER: 600-1-095A
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            APPLICATION NUMBER: FILING DATE: Septem CLASSIFICATION: 43
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INVENTION: GLYCOSYLTRANSFERASES
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GLYCOSYLTRANSFERASES FOR BIOSYNTHESIS OF
OLIGOSACCHARIDES, AND GENES ENCODING THEM
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71.6%;
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RESULT 10 US-08-478-140B-6

Sequence 6, Application Patent No. 6127153
GENERAL INFORMATION:

US/08478140B

APPLICANT:

JOHNSON, KARL F. ROTH, STEPHEN BUCZALA, STEPHAN

APPLICANT:

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Best Local Similarity
Matches 209; Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             NAME: Jackson Esq., David A.
REGISTRATION NUMBER: 26,742
REFERENCE/DOCKET NUMBER: 600
TELECOMMUNICATION INFORMATION:
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CURRENT APPLICATION DATA:
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MEDIUM TYPE: Floppy disk
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NUMBER OF SEQUENCES:
                241 PANTFKHR------LIRALTKIGREREKRRORR-----EQLIGKIIVPFQ 279
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234
                                                                             181 VDLMMFGNPDDREGMPVCQLNPALCAQELHYAKFHDQNSALGSLIEHDRRLNRKQQWRDS
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                                                                                                                                                     121 LETMFMHVLTSPSGVADYGGRAFPLLESEHCGTAGYIISRKAMRFFLDRFAVLPPERLHP 180
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----RHRRSLKVMFDLKRALGKFGREKKKRMERQRQAELEKVYGRRVILFK 280
                                                                                                                        LETMFAKVIVRPDKVLNYENRSFPLLESEHCGTAGYIISREAMRFFLDRFAVLPPERIKA
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RESULT 11
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                                                                        Sequence 6, Application US/U9333412
Patent No. 6342382
GENERAL INFORMATION:
APPLICANT: Gotschlich, Emil C.
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MEDIUM TYPE: Floppy disk
COMPUTER: IBM PC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PATENTIN Release #1.0, Vers
CURRENT APPLICATION DATA:
APPLICATION NUMBER: US/08/478,140B
FILING DATE: 07-JUN-1995
CLASSIFICATION: 435
ATTORNEY/AGENT INFORMATION:
NAME: LAUIA A. COLUZZÍ
NAME: LAUIA A. COLUZZÍ
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TITLE OF INVENTION:
TITLE OF INVENTION:
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REGISTRATION NUMBER: 3
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STATE: New Yor
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Local Similarity 71.6%;
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                                 NUMBER OF SEQUENCES: 12
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                                             INVENTION: GLYCOSYLTRANSFERASES FOR BIOSYNTHESIS OF OLIGOSACCHARIDES, AND GENES ENCODING THE
Klauber
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of the Americas
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                                                                                               APPLICANT:
APPLICANT:
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; SEQUENCE DESCRIPTION: SEQ ID NO: US-09-333-412-6
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GENERAL INFORMATION:
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INFORMATION FOR SEQ ID NO: 6:
APPLICANT: BUCZALA, STEPHANIE L.

TITLE OF INVENTION: METHOD OF TRANSFERRING AT LEAST TWO
TITLE OF INVENTION: SACCHARIDE UNITS WITH A POLYGLYCOSYL
TITLE OF INVENTION: POLYGLYCOSYLTRANSFERASE AND GENE EN
TITLE OF INVENTION: POLYGLYCOSYLTRANSFERASE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                234 ----RHRRSLKVMFDLKRALGKFGREKKKRMERQRQAELEKVYGRRVILFK
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  1 MQNHVISLASAAERRAHIAATTGSRGIPFQFFDALMPSERLERAMAELVPGLSAHPYLSG 60
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             REGISTRATION NUMBER: 26,742
REFERENCE/DOCKET NUMBER: 600-1-095
TELECOMMUNICATION INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 SOFTWARE: Patentin R
CURRENT APPLICATION DATA:
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MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE CHARACTERISTICS:
LENGTH: 280 amino acids
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICATION NUMBER: 08/312,387 FILING DATE: July 7, 1994 ATTORNEY/AGENT INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VEKACFMSHAVLWEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQERFDPDSAFVVR 120
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          VDLMMFGNPDDREGMPVCQLNPALCAQELHYAKFHDQNSALGSLIEHDRRLNRKQQWRDS 240
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   MONHVISLASAAERRAHIADTFGSRGIPFQFFDALMPSERLEQAMAELVPGLSAHPYLSG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       LETMFAKVIVRPDKVLNYENRSFPLLESEHCGTAGYIISREAMRFFLDRFAVLPPERIKA 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            LETMFMHVLTSPSGVADYGGRAFPLLESEHCGTAGYIISRKAMRFFLDRFAVLPPERLHP 180
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                                                                                                                                                                                                                                                                                                                                                                    , Application US/09338943 6379933
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CLASSIFICATION: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: US/09/333,412 FILING DATE: 15-Jun-1999
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                                                                                                                                                                                                                                                                           JOHNSON, KARL F.
                                                                                                                                                                                                                                 STEPHEN
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Pred. No. 3.4e-111;
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                                          POLYGLYCOSYLTRANSFERASE, AND GENE ENCODING A
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US-08-701-191A-27 . Sequence 27, Application US/08701191A ; Patent No. 5942428 .
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Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TELEFAX: (212) 869-974
TELEX: 66141 PENNIE
INFORMATION FOR SEQ ID NO:
SEQUENCE CHARACTERISTICS:
LENGTH: 280 amino acid
                                                                                                                                                                                    GENERAL INFORMATION:
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TELECOMMUNICATION INFORMATION:
TELEPHONE: (212) 790-9990
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
COMPUTER: IBM FC compatible
OPERATING SYSTEM: PC-DOS/MS-DOS
SOFTWARE: PatentIn Release #1.0, Version #1.30
CURRENT APPLICATION DATA:
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PRIOR APPLICATION DATA:
                                                          NUMBER OF SEQUENCES: 4
CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ATTORNEY/AGENT INFORMATION:
                                                                                                  TITLE OF INVENTION: CRYSTALS OF THE TYROSINE KINASE DOMAIN TITLE OF INVENTION: OF NON-INSULIN RECEPTOR TYROSINE KINASI
                                                                                                                                           APPLICANT: Moosa Mohammadi, Joseph Schlessinger, APPLICANT: and Stevan R. Hubbard
                                                                                                                                                                                                                                                                                                                                                                      241 PANTFKHR-----LIRALTKIGREREKRRORR-----EQLIGKIIVPFQ 279
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                     STREET:
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10036-2711
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1155 Avenue of the Americas
E: Lyon & Lyon 633 West Fifth Street Suite 4700
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71.6%; Pred. No. 3.46
:ive 24; Mismatches
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3.4e-111;
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; ORGANISM: Staphylococcus epidermidis
US-09-134-001C-3799
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Best Local S
Matches 35
                                                                                                                                                                                                                            GENERAL INFORMATION:
APPLICANT: LYNN DOUCETTE-Stamm et al
TITLE OF INVENTION: NUCLEIC ACID AND
TITLE OF INVENTION: EPIDERMIDIS FOR
                                               NUMBER OF SEQ ID NOS: 5674
SEQ ID NO 3799
LENGTH: 337
                                                                                                                                                                                                                                                                                                      Sequence 3799, Application US/09134001C Patent No. 6380370
                                                                                                                                                                             CURRENT APPLICATION NUMBER: US/09/134,001C CURRENT FILING DATE: 1998-08-13
                                                                                                                      PRIOR APPLICATION NUMBER: US 60/064,964 PRIOR FILING DATE: 1997-11-08 PRIOR APPLICATION NUMBER: US 60/055,779
                                                                                                                                                                                                                 FILE REFERENCE: GTC-007
                                                                                                     PRIOR FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      INFORMATION FOR SEQ ID NO:
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NAME: Warburg, Richard J.
REGISTRATION NUMBER: 32,327
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TELECOMMUNICATION INFORMATION:
TELEPHONE: (213) 489-1600
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MEDIUM TYPE: 3.5" Diskette,
MEDIUM TYPE: storage
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   SEQUENCE CHARACTERISTICS:
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                                                                                                                                                                                                                                                                                                                                                                                                                      240
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          193
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               133 ERALTMGDLISFAWQISQGMQYLAEMKLVHRDLAARNILVAEGRKMKISDFGLSRDVYEE 192
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             US/08/701,191A
CLASSIFICATION: 530
LOR APPLICATION: 530
APPLICATION: 530
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 COMPUTER: IBM CON OPERATING SYSTEM: SOFTWARE: FastSE
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TOPOLOGY: 111
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         COUNTRY: U.S.A. ZIP: 90071-2066
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               62 EKACFMSHAVLWEQALDEGVPYIA----VFED----DVLLGEGAEQFLAEDTWLQERFDP 113
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Local Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                      ----NPYPGIPPERL--FNLLKTGHRMER----
                                                                                                                                                                                                                                                                                                                                                                                                                                                      MREFLDREAVLPPERLHPVDLMMFGNPDDREGMPVCQLNPALCAQELH 210
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          DS-YVKRSQGRIPVKWMAIESLFDHIYTTQSDVWSFGVLLWEIV--
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California
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                                                                                                                                                                                                                                AMINO ACID SEQUENCES RELATING DIAGNOSTICS AND THERAPEUTICS
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; ORGANISM: Synechocystis sp.
US-09-564-805-236
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US-09-564-805-236
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          SOFTWARE: Pa
SEQ ID NO 236
• LENGTH: 554
                                                                                                                                                                                                                                                                                                                                                                                       Query Match
Best Local Similarity 21.5
Matches 64; Conservative
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  PRIOR FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      CURRENT APPLICATION NUMBER: US/09/564,805
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     PPLICANT:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      ITLE OF INVENTION: Chromosome 17p-Linked I
415 AAGNAVALPIGDREVQPTPPPPQIYEGEIHELEPNKQIHHLGEVVIHLDGQILENSRW 472
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  101 LAEDTWLQERFDPDSAFVVRLETMFMHVLTSPSGVADYGGRAFPLLESEHCGTAGYIISR 160 :| :| :| : | |
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       205 PLDERSREMKIGFEKGHSYSHHLLIEQSINALKGAGYAFLVVPSHLFEDDKV--KQLENF 262
                                                                          363 YLLADHSDGRNTTQLIHN----LRPQHL----VFVHGQPSDIEDLTSLEELQSRYQLHSP 414
                                                                                                                 151 CGTAGYIISRKAMRFFLDRFAVLPPERLHPVDLMMFGNPDDREGMPVC-----QLN-- 201
                                                                                                                                                                                                                                                                                                          191 YGNRRLPHRRQQEKQFIQAIETYLAKGRNILLPVPPLGLAQ-EILKLLRTHHQFTGRQVN 249
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       161 KAMRFFLDRFAVLPPERLHPVDLMM-----FGNPDDREGMPVCQLN 201
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                263 IATETEMQ--
                                                                                                                                                                                                                                  250 LWAGESVARGCDAYQGIIDHLPDNVRNFAQHQPLFWD---DKVYPHLRPLTDD--QGELS 304
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   150 IMHHLIEVDPVLSRVSVHLANF--LEIPFDVYPQDAIMP---LPLEEADVVIGDFPIGYY 204
                                                                                                                                                                             96 -GAEQFLAEDTWLQERFDPDSAFVVRLETMFM-HVLTSPSGVADVGGR---AFPLLESEH 150
                                                                                                                                                                                                                                                                    61 -----VEKAC------FMSHAVL-WEQALDEGVPYIAVFEDDVLLGE-- 95
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    No.
                                                                                                                                                     LSAPSIVITTW--PAFWPSPAALPGLWTVFMPQLLTLPSCLVNFAWQDLEEFPKYELED 362
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  INFORMATION:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PatentIn Ver. 2.0
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Myriad Genetics, Inc.
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RER: US 60/107,468
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                                    -----PALCAQELHYAKFHDQNSALGSLIEH-DRRLNRKQQW 237
                                                                                                                                                                                                                                                                                                                                                                                                         5.5%; Score 81; DB 4; Length 554; 21.5%; Pred. No. 1.3;
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                                                                                                                                                                                                                                                                                                                                                                                     37; Mismatches
                                                                                                                                                                                                                                                                                                                                                   17p-Linked Prostate Cancer Susceptibility
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Search completed: May 27, 2003, 18:18:46 Job time: 30 secs

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No. is the number of results predicted by chance to have a greater than or equal to the score of the result being printed, serived by analysis of the total score distribution.
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/cgn2_6/ptodata/2/pubpaa/US06_NEW_PUB.pep:*
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Sequence 8, Appli
Sequence 2, Appli
Sequence 1, Appli
Sequence 1, Appli
Sequence 186, Appli
Sequence 186, Appli
Sequence 236, Appli
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Sequence 1, Appli
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US-10-007-267-8
US-10-007-267-8
; Sequence 8, Application US,
; Patent No. US20020127682A1
; GENERAL INFORMATION:
                                             TELEX: 133521
INFORMATION FOR SEQ ID NO: 8:
SEQUENCE CHARACTERISTICS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: 08/312,387
FILING DATE: July 7, 1994
ATTORNEY/AGENT INFORMATION:
NAME: Jackson Esq., David A.
REGISTRATION NUMBER: 26,742
REFERENCE/DOCKET NUMBER: 600-1-095
TELECHMUNICATION INFORMATION:
TELECHONE: 201 487-5800
                                                                                                                                                                                                                                                                                                                                                                                                                                                      CURRENT APPLICATION DATA:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             COMPUTER READABLE FORM:
MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NUMBER OF SEQUENCES: 12 CORRESPONDENCE ADDRESS:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          72.
72
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TITLE OF INVENTION: GLYCOSYLTRANSFERASES FOR BIOSYNTHESIS OF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                APPLICANT: Gotschlich,
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TELEFAX: 201 343-1684
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APPLICATION NUMBER: US/09/333,412
FILING DATE: 15-Jun-1999
                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: US/10/007,267
FILING DATE: 03-Dec-2001
CLASSIFICATION: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  STATE: New Je
COUNTRY: USA
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       CITY: Hackensack
STATE: New Jersey
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           STREET:
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                          LENGTH:
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                     279 amino acids
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US-09-738-626-4773
US-09-916-790-5
US-10-097-340-208
US-10-097-340-208
US-09-815-242-5004
US-09-815-242-10734
US-09-739-451-4
US-09-739-451-12
US-09-737-149-30
US-09-737-149-30
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US-10-1.66-087-34
US-09-738-626-5823
US-09-764-868-826
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US-10-235-056-17

US-10-027-806-4

US-10-034-623-4

US-10-027-801-4
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US-09-789-390-13
US-09-789-390-11
US-09-789-390-30
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Sequence 34, Appl
Sequence 823, App
Sequence 826, App
Sequence 4, Appli
Sequence 2, Appli
Sequence 11, Appl
Sequence 11, Appl
Sequence 30, Appl
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Sequence 4773, Ap
Sequence 5, Appli
Sequence 208, App
Sequence 904, App
Sequence 10734, Ap
Sequence 1734, Appli
Sequence 12, Appli
Sequence 12, Appli
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Sequence 4, Appli
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Post-processing: Minimum Match
Maximum Match

Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Published_Applications_AA: *

Minimum DB Maximum DB

seq length: 0 seq length: 2000000000

Total number of hits satisfying chosen parameters:

375593

375593 seqs, 99172665 residues

Database

Result

score Pred. No.

7: 8: 9: 10: 11: 12: 13:

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No.

Score

Match

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SUMMARIES

Query

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US-10-007-267-8 US-09-211-691-2 US-10-007-267-6

81 80 80 80 80 80 78 77 77

0 US-09-864-761-48086 0 US-10-253-007-54 0 US-10-235-056-1 0 US-10-235-056-1 0 US-09-849-031A-1 0 US-09-849-562A-1 0 US-09-815-242-5371

US-09-815-242-12608 US-09-454-279-22 US-09-764-853-551

12 110 110 110 110 110 110 110 110 110

US-10-218-381-1 US-10-225-056-7 US-09-895-913A-186 US-09-895-913A-186 US-09-988-626-236 US-09-988-626-236 US-09-988-627-236

Perfect score: Sequence:

US-10-007-267A-8 1461

OM protein -

protein search, using sw model

GenCore version 5.1.4_p5_4578 Copyright (c) 1993 - 2003 Compugen Ltd.

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Scoring table:

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; SEQUENCE DESCRIPTION: SEQ ID
US-10-007-267-8
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                                                                                                                                                                                                                                                                                                                                                                CURRENT APPLICATION NUMBER: US/09/211,691
CURRENT FILING DATE: 1998-12-14
PRIOR APPLICATION UNMBER: 'US 60/069,443
PRIOR FILING DATE: 1997-12-15
NUMBER OF SEQ ID NOS: 18
SOFTWARE: Patentin Ver. 2.1
SEQ ID NO 2
LENGTH: 275
                                                                                                                                                                                                                                                                        Query Match
Best Local
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                                                                                                                                                                                                                                                          Matches
                                                                                                                                                                                                                                                                                                              LENGTH: 275
TYPE: PRT
ORGANISM: Neisseria meningitidis
-09-211-691-2
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APPLICANT:
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                                                                 121
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181 VDLMMFSDFFDREGMPVCQLNPALCAQELHYAKFHDQNSALGSLIEHDRL
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                               181 VDLMMFGNPDDREGMPVCQLNPALCAQELHYAKFHDQNSALGSLIEHDRRLNRKQQWRDS 240
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                                                                                                                                                                                                                                                                        Local Similarity
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                                                                                                                                           VEKACEMSHAYLMEQALDEGYPYIAYFEDDVLLGEGAEQFLAEDTWLQERFDPDSAFYVR 120
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                                                                                                                           VEKACFMSHAVLWKQALDEGLPYITVFEDDVLLGEGEEKFLAEDAWLQERFDPDTAFIVR 120
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Wakarchuk, Warren W.
National Research Council of Canada
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Gilbert, Michel
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Pred. No. 4.6e-125;
7; Mismatches 17;
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Pred. No. 6.2e-143;
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Best Local Similarity 71.6
Conservative
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Patent No. US20020127682A1
GENERAL INFORMATION:
APPLICANT: Gotschlich, Emil
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APPLICATION NUMBER: US/09/333,412
FILING DATE: 15-Jun-1999
APPLICATION NUMBER: 08/312,387
FILING DATE: July 7, 1994
ATTORNEY/AGENT INFORMATION:
NAME: Jackson Esq., David A.
REGISTRATION NUMBER: 26,742
REFERENCE/DOCKET NUMBER: 600-1-095
TELEPHONE: 201 487-5800
TELEPHONE: 201 487-5800
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                                                                                                                                            61
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                                                                                                                                                                                                            SOFTWARE: PatentIn Release #1.0, CURRENT APPLICATION DATA:
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MEDIUM TYPE: Floppy disk
                                                                                                                                                                                                                                                                                                                                                                                                                                                                  SEQUENCE CHARACTERISTICS:
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ADDRESSEE: Klauber & Jackson
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              NUMBER OF SEQUENCES: 12
                       VDLMMFGNPDDREGMPVCQLNPALCAQELHYAKFHDQNSALGSLIEHDRRLNRKQQWRDS
                                                                                       LETMFMHVLTSPSGVADYGGRAFPLLESEHCGTAGYIISRKAMRFFLDRFAVLPPERLHP 180
                                                                                                                                                            VEKACFMSHAVLWEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDIWLQERFDPDSAFVVR 120
                                                                     LETMFAKVIVRPDKVLNYENRSFPLLESEHCGTAGYIISREAMRFFLDRFAVLPPERIKA 180
                                                                                                                                          VEKACFMSHAVLWEQALDEGLPYIAVFEDDVLLGEGAEQFLAEDTWLEERFDKDSAFIVR
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VDLMMFTYFFDKEGMPVYQVSPALCTQELHYAKFLSQNSMLGSDLEKDREQGR------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          APPLICATION NUMBER: US/10/007,267
FILING DATE: 03-Dec-2001
CLASSIFICATION: <Unknown>
                                                                                                                                                                                                                                                                                                                                                                                                          TYPE: amino acid
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  COMPUTER: IBM PC compatible OPERATING SYSTEM: PC-DOS/MS-DOS
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STATE: New Jersey
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                                                                                                                                                                                                                                                                                                                                                                                                                                              LENGTH: 280 amino acids
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INVENTION: GLYCOSYLTRANSFERASES FOR BIOSYNTHESIS OF
OLIGOSACCHARIDES, AND GENES ENCODING THEM
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                                                                                                                                                                                                                                                                                   Score 1036.5; DB
Pred. No. 4.7e-99;
4; Mismatches 34
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US-10-235-056-7
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                 ; PRIOR FILING DATE: 1999; NUMBER OF SEQ ID NOS: 2; SOFTWARE: PatentIn vers; SEQ ID NO 7; LENGTH: 389; TYPE: PRT
                                                                                                                                                                                                                                                                                                   Sequence 7, Application US/10235056 Publication No. US20030059915A1 GENERAL INFORMATION:
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Best Local Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PRIOR APPLICATION NUMBER: US/09/601,519
PRIOR FILING DATE: 2000-08-02
PRIOR APPLICATION NUMBER: PCT/JP99/00321
PRIOR ETILING DATE: 1999-01-27
PRIOR APPLICATION NUMBER: JP 10-023389
PRIOR FILING DATE: 1998-02-04
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CURRENT APPLICATION NUMBER: US/10/218,381
CURRENT FILING DATE: 2002-08-15
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICANT: Satoshi KOIZUMI.
                                                                                                                                                             CURRENT APPLICATION NUMBER: US/10/235,056
CURRENT FILING DATE: 2002-09-04
                                                                                                                                                                                                                    APPLICANT: Ju, Tongzhong
TITLE OF INVENTION: CORE 1 3-GALACTOSYL TRANSFERASES
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     APPLICANT:
                                                                                                                  CURRENT FILING DATE: 2002-09-04
PRIOR APPLICATION NUMBER: US 09/461,321
PRIOR FILING DATE: 1999-12-15
                                                                                                                                                                                                                                                             APPLICANT: Canfield, William M. APPLICANT: Cummings, Richard D.
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                                                                                                                                                                                                     FILE REFERENCE: 5820.630
ORGANISM: Caenorhabditis elegans
                                                                                                                                                                                                                                                                                                                                                                                                                                                 200 AKVF------KKHSRKWVVPVDTIM 218
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          163 MRFFLDRFAVLPPERLH-----PVDLMM 185
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Akio OZAKI
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                                                                            version 3.1
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RESULT 7
US-10-235-056-9
; Sequence 9, Ap
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TYPE: PRT
; ORGANISM: Helicobacter pylori
US-09-895-913A-186
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SOFTWARE: FastSEQ for Windows Version 4.0 SEQ ID NO 186

LENGTH: 273
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Matches 45; Conserv
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             TITLE OF INVENTION: Identification of Polynucleotides
TITLE OF INVENTION: Encoding No. US20020160456Alel Helicobacter Polypeptides
TITLE OF INVENTION: Genome
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                                                                                                                               201 NPALCAQELHYAKFHDQNSALGSLIEHDRR 230
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                                                                                                                                                                                                                                            49 ALELLEMTGIECVQTIKDKERFKPKDALMEIRGDFSMLLKVERTLLNLLQHSSGIATLTS 108
                                                                                                                                                                                                                                                                                                                                                    41 LERAMAELVPGLSAHPYLSGVEKACFMSHAVLWEQALD---EGVPYIAVFEDDVLLGEGA 97
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                                                                                              DDALMLKDTHLRHVKD----LKSFLTHARK 177
                                                                                                                                                                    REVEALNSHKVRLLDTRKTRPLLRIF-EKYSVLNG-
                                                                                                                                                                                                     RAFPLLESEHCGTAGYIISRKAMRFFLDRFAVLPPERLHPVDLMMFGNPDDREGMPVCQL 200
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                                                                                                                                                                                                                                                                                -ERFDP-----DSAFVVRLETMFMHVLTSPSGVADYGG 140
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Pred. No. 1.9;
33; Mismatches
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                                                                               ; ORGANISM: Synechocystis sp. US-09-988-626-236
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; ORGANISM: Drosophila melanogaster
US-10-235-056-9
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SOFTWARE: PatentIn version 3.1
SEQ ID NO 9
                                                                                                                                    SOFTWARE: PatentIn Ver. 2.0.
SEQ ID NO 236
LENGTH: 554
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Best Local Similarity
  Matches
                                  Query Match
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CURRENT FILING DATE: 2002-09-04
PRIOR APPLICATION NUMBER: US 09/461,321
PRIOR FILING DATE: 1999-12-15
                                                                                                                                                                                                                                                                                          FILE REFERENCE: 2318-258
CURRENT APPLICATION NUMBER: US/09/988,626
CURRENT FILING DATE: 2001-11-20
PRIOR APPLICATION NUMBER: 09/564,805
PRIOR FILING DATE: 2000-05-05
                                                                                                                                                                                                                                                                                                                                                                               APPLICANT: Rommens, Johanna M.
APPLICANT: Myriad Genetics, Inc.
TITLE OF INVENTION: Chromosome 1/p-Linked Prostate Cancer Susceptibility
TITLE OF INVENTION: Gene and a Paralog and Orthologous Genes
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICANT: JU, TONGZNONG
TITLE OF INVENTION: CORE 1 3-GALACTOSYL TRANSFERASES
FILE REFERENCE: 5820.330
                                                                                                                                                                                                   NUMBER OF SEQ ID NOS:
                                                                                                                                                                                                                   PRIOR APPLICATION NUMBER: 09/434,382 PRIOR FILING DATE: 1999-11-05
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                                                                                                                                                                                                                                                          PRIOR FILING DATE: 1998-11-06
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                                                                                                                     TYPE: PRT
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          165 YNDADFFYKADDDTYAVIENMRYMLYPYNPETPVHFGFKFKPFVKQGYMSGGAGYILSRE 224
y Match 5.5%; Score 81; DB 9;
Local Similarity 21.5%; Pred. No. 7.1;
hes 64; Conservative 37; Mismatches 9
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o. US20030044959A1
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              ; ORGANISM: Synechocystis sp. US-09-988-687-236
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 PRIOR APPLICATION NUMBER: US 60/107,468 PRIOR FILING DATE: 1998-11-06 PRIOR APPLICATION NUMBER: 09/434,382
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CURRENT FILING DATE: 2001-11-20
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PRIOR FILING DATE: 2000-05-05
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415 AAGNAVALPIGDRFVQPTPPPPQIYEGEIHELEPNKQIHHLGEVVIHLDGQILENSRW
                                                                                      363
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                                                                                                                                                                                                                                                              250 LWAGESVARGCDAYQGIIDHLPDNVRNFAQHQPLFWD---DKVYPHLRPLTDD--QGELS 304
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                                                                                                                                                                                                                                                                                                         61 ----- VEKAC------ 95
                                                                                                                                                                                                                                                                                                                                                                                               22 FGSRGIPF-----QFFDA-----LMPSERLERAMAELVPGLSAHPYLSG----
                                                                                                                                                                                                                                                                                                                                                                                                                                      Match 5.5%; Score 81; DB Local Similarity 21.5%; Pred. No. 7.1; Local Similarity 23.5%; Mismatches 64; Conservative .37; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              22 FGSRGIPF-----QFFDA----
                                                                                   YLLADHSDGRNTTQLIHN----LRPQHL----VFVHGQPSDIEDLTSLEELQSRYQLHSP 414
                                                                                                                               CGTAGYIISRKAMRFFLDRFAVLPPERLHPVDLMMFGNPDDREGMPVC-----QLN-- 201
                                                                                                                                                                          LSAPSIVITTW--PAFWPSPAALPGLWTVFMPQLLTLPSCLVNFAWQDLEEFPKYELED 362
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                                                                                                                                                                                                                   -GAEOFLAEDTWLQERFDPDSAFVVRLETMFM-HVLTSPSGVADYGGR---AFPLLESEH 150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      -GAEQFLAEDTWLQERFDPDSAFVVRLETMFM-HVLTSPSGVADYGGR---AFPLLESEH 150
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     Rommens, Johanna M. Myriad Genetics, In
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David H.F.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        09/564,805
                                           -PALCAGELHYAKFHDQNSALGSLIEH-DRRLNRKQQW 237
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   DB 9;
                                                                                                                                                                                                                                                                                                                                                                                                                                        99; Indels
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Length 554;
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472
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                                                                                                 Query Match
Best Local
                                                                                                                                                                                                                                                                                                                                                                          SOFTWARE: Annomax Sequence Listing Engine vers. 1.1 SEQ ID NO 48086
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           GENERAL INFORMATION:
                                                                                                                                                                             OTHER INFORMATION: MAP TO ACO05532.1
OTHER INFORMATION: EXPRESSED IN LUNG, SIGNAL = 1.5
OTHER INFORMATION: EXPRESSED IN PLACENTA, SIGNAL = 1.5
OTHER INFORMATION: SWISSPROT HIT: Q50950, EVALUE 4.90e-01
OTHER INFORMATION: EST_HUMAN HIT: BE336820.1, EVALUE 1.00e-112
                                                                                                                                                                                                                                                                                                                                                                                                                   NUMBER OF SEQ ID NOS: 49117
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PRIOR FILING DATE: 2000-02-04
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  CURRENT APPLICATION NUMBER: US/09/864,761
CURRENT FILING DATE: 2001-05-23
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILE REFERENCE: Aeomica-X-1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 IITLE OF INVENTION: HUMAN GENOME-DERIVED SINGLE EXON NUCLEIC ITLE OF INVENTION: GENE EXPRESSION ANALYSIS BY MICROARRAY
                                                                                                                                                                                                                                                                                            FEATURE:
                                                                                                                                                                                                                                                                                                           ORGANISM: Homo sapiens
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              tent No. US20020048763A1
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86
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                                                                                                                                                                                                                                                                                                                                                                                                                                           FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                        FILING DATE: 2000-06-30 APPLICATION NUMBER: US 09/774,203
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   APPLICATION NUMBER: US 09/608,408
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         APPLICATION NUMBER: PCT/US01/00665
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               APPLICATION NUMBER: PCT/US01/00666 FILING DATE: 2001-01-30
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        APPLICATION NUMBER: US 60/236,359 FILING DATE: 2000-09-27
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             FILING DATE:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             APPLICATION NUMBER: PCT/US01/0066
                                    EGAEQFLAED-----TWLQERFDPDSAFVVRLETMFMHVLTSPSGVADYGGRAF- 143
EDADWFLKADDDTYVILDNLRWLLSKYDPEEPI-
                                                                                                                                                                                                                                                                                                                                                         222
                                                                                                 Similarity
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ICATION NUMBER: US 60/234,687 NG DATE: 2000-09-21
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       ICATION NUMBER: PCT/US01/00668
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   CATION NUMBER: PCT/US01/00669
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                                                                                Conservative
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David K.
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                                                                                               5.5%;
26.1%;
                                                                                               Score 80;
Pred. No.
                                                                              Mismatches
                                                                                                 2.6;
                                                                                                                     DB 10; Length 222;
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                                                                                19;
                                                                              Indels
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                                                                         Gaps
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GENERAL INFORMATION:

APPLICANT: Canfield, William M.
APPLICANT: Cummings, Richard D.
APPLICANT: Ju, Tongzhong
TITLE OF INVENTION: CORE 1 3-GALACTOSYL TRANSFERASES
FILE REFERENCE: 5820.630

CURRENT APPLICATION NUMBER: US/10/235,056
CURRENT FILING DATE: 2002-09-04
PRIOR APPLICATION NUMBER: US 09/461,321

Sequence 11, Application US/10235056 Publication No. US20030059915A1

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US-10-235-056-11
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Best Local :
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           TITLE OF INVENTION: Scarecrow Gene,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               PRIOR APPLICATION NUMBER: US/09/186,188 PRIOR FILING DATE: 1998-11-05
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CURRENT FILING DATE: 2002-09-23
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PRIOR FILING DATE: 1997-04-24
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ORGANISM: Plant
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          LOCATION: (1)...(285)
OTHER INFORMATION: Xa
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                                                                                                                                                                                                                                                                                                         114 --LHHMP-----DESVS-VEKYRDRLL-----
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                                                                         253 KLGGHEGALYLFWKRRPMATCSVWKPNP 280
                                                                                                             220 ALGS-----LIEHDRRLNRKOOWRDSP 241
                                                                                                                                                   203 ACEESERVERHEVLGKWR---VRMMMAG----FTGWPV-STSAAFAASEM--LKAYDKNY 252
                                                                                                                                                                                                                             151 --NTNTSPLVSRFVETLDYYTAMFESIDAARPRDDKQRISAEQHC-----VARDIVNMI 202
                                                                                                                                                                                                                                                                   125 FMHVLTSP----SGVADYGGRAFPLLES-----
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Local
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                                                                                                                                                                                                                                                                                                                                                                                  63 LSLVGERLATLAQ---SCGVPFEFHDAIMSGCKVQREHLGLEPGFAVVVNFPYV----- 113
                                                                                                                                                                                                                                                                                                                                                                                                                    8 LASAAERRAHIAATFGSRGIPFQFFDALMPSERLERAMAELVPGLSA---HPYLSGVEKA 64
                                                                                                                                                                                       -----LDRFAVLPPERLHPVDLMMFGNPDDREGMPVCQLNPALCAQELHYAKFHDQNS
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Pred. No.
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16;

SEQ ID NO 11 LENGTH: 350

PRIOR FILING DATE: 1999-12-15 NUMBER OF SEQ ID NOS: 25

SOFTWARE: PatentIn version 3.1

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US-09-849-031A-1
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; TYPE: PRT
; ORGANISM: Homo sapiens
US-10-235-056-1
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PRIOR APPLICATION NUMBER: 09/334,013
PRIOR FILING DATE: 1999-06-15
NUMBER OF SEQ ID NOS: 40
SOFTWARE: PatentIn version 3.1
SEQ ID NO 1
                                                                                                                                                                                                                    GENERAL INFORMATION:
                                                                                                                                                                                                                                  Sequence 1, Application US/09849031A Patent No. US20020026033A1
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Query Match
Best Local Similarity
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Best Local Similarity
                                                                                        ELLE REFERENCE: 5820.593
CURRENT APPLICATION NUMBER: US/09/849,031A
CURRENT FILING DATE: 2001-05-04
                                                                                                                                   APPLICANT: Cummings, Richard D.
APPLICANT: McEver, Rodger P.
TITLE OF INVENTION: synthetic glycosulfopeptides and methods of synthesis thereof
FILE REFERENCE: 5820.593
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CURRENT FILING DATE: 2002-09-04
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PRIOR FILING DATE: 1999-12-15
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PPLICANT: Ju, Tongzhong
TILE OF INVENTION: CORE 1 3-GALACTOSYL TRANSFERASES
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Best Local Similarity.
Matches 23; Conserva
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APPLICANT: McEver, Rodger P.
TITLE OF INVENTION: synthetic glycosulfopeptides and methods of synthesis thereof FILE REFERENCE: 5820.594
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GenCore version 5.1.4_p5_4578

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OM protein - protein search, using sw model

Run on: May 27, 2003, 18:12:59; Search time 45 Seconds
(without alignments)
596.033 Million cell updates/sec

Title: US-10-007-267A-8
Perfect score: 1461
Sequence: 1 MONHVISLASAAERRAHIAA......REKRRORREQLIGKIIVPFQ 279

Scoring table: BLOSUM62
Gapop 10.0, Gapext 0.5

Searched: 283224 seqs, 96134422 residues
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Total number of hits satisfying chosen parameters: Minimum DB seq length: 0
Maximum DB seq length: 2000000000

283224

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database: PIR_73:*
1: pir1:*
2: pir2:*
3: pir3:*
4: pir4:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

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ALIGNMENTS

RESULT 1 AR81971 Lacto-N-neotetraose biosynthesis glycosyl transferase RMA0525 [imported] - Nei C.Species: Neisseria meningitidis C.Date: 05-May-2000 *sequence_revision 05-May-2000 *text_change 02-Feb-2001 C.Pate: 05-May-2000 *sequence_revision 05-May-2000 *text_change 02-Feb-2001 C.Pate: 05-May-2000 *sequence of a serogroup A strain of Neisseria menigitidi A.Reference number: A81775; MUID:2022556; PMID:10761919 A.						<i>.</i> ,		.
"N-neotetraose biosynthesis glycosyl transferase NMAO525 [imported] - Neiclas: Neisseria meningitidis clos: Neisseria meningitidis c: 05-May-2000 #text_change 02-Feb-2001 es: 05-May-2000 #sequence_revision 05-May-2000 #text_change 02-Feb-2001 es: 05-May-2000 #sequence_revision 05-May-2000 #text_change 02-Feb-2001 es: 05-May-2000 #sequence_revision 05-May-2000 #text_change 02-Feb-2001 es: 05-May-2000 #sequence of a serogroup A strain of Neisseria menigitidi erace number: A81775; MUID:20222556; PMID:10761919 ession: A81971 tus: preliminary ecule type: DNA sequence of a serogroup A strain of Neisseria menigitidi erace type: DNA sequence of a serogroup A strain of Neisseria menigitidi erace type: DNA sequence of a serogroup A strain z2491 tus: preliminary ecule type: DNA strain z2491 eciles 1-279 <pre>cpaRb</pre> sidues: 1-279 <pre>cpaRb</pre> sidues: 1-279 <pre>spaRb</pre> spaRb s	д УО	ОУ	Db Qy	D Qy	p Q	Que Bes Mat	A, Ref A, Sta A, Sta A, Sta A, Cres A, Cres C, Gen C, Sup	RESUL A8197 lacto C; Spe C; Dat C; Acc R; Par R; Par Natur
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Hickey, E.K.;
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Science 287,
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Hickey, E.K.;
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A;Title: Molecular analysis of a locus for the biosynthesis an A;Reference number: S70812; MUID:96414473; PMID:8817494
A;Accession: S70814
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A; Cross-references: GB: AE002541;
A; Experimental source: serogroup
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                                                              LETMEMHYLTSPSGVADYCGRAFPLLESEHWGTAGYIISRKAMRFFLDRFAALPPEGLHP
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VEKACFMSHAVLWKQALDEGLPYITVFEDDVLLGEGEEKFLAEDAWLQERFDPDTAFIVR
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                                                                                                                                                   Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             .; Saunders, N.J.; Heidelberg, J.; Jeffries, A.C.; Nelson, Haft, D.H.; Salzberg, S.L.; White, O.; Fleischmann, R.D.; 1; Vanathevan, J.; Gill, J.; Scarlato, V.; Masignani, V.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         lipopolysaccharide biosynthesis-associated
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nilarity 90.3%;
Conservative
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                                                                                                                                                                                                                                                                        NID:g973183;
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B, strain MC
                                                                                                                                   Score 1288; D
Pred. No. 3.6e
7; Mismatches
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                                                                                                                                                                                                                                                                                                                          sequence not shown
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MC58
                                                                                                                                   8; DB 2;
3.6e-111;
ches 17;
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; Dougherty, B.A.
; Pizza, M.
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RESULT 5 A81027

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·KVLLKRALGKIGREIERARERKRQKKLEKHLGRHVVPFE

R;Tettelin, H.; Saunders, N.J.; Heidelberg, J.; Jeffries, A.C.; Nelson, Hickey, E.K.; Haft, D.H.; Salzberg, S.L.; White, O.; Flelschmann, R.D.; ri, H.; Qin, H.; Vamathevan, J.; Gill, J.; Scarlato, V.; Masignani, V.; Science 287, 1809-1815, 2000
A;Authors: Grandi, G.; Sun, L.; Smith, H.O.; Fraser, C.M.; Moxon, E.R.;

A; Title: Complete g A; Reference number:

genome

sequence of Neiss 00; MUID:20175755;

Neisseria

eria meningitidis PMID:10710307

serogroup

B

strain Rappuoli,

, R.;

K.E.; Eisen, Dougherty, B Pizza, M.

8

lacto-N-neotetraose biosynthesis glycosyl transferase LgtE NMB1926 [importe C;Species: Neisseria meningitidis C;Date: 31-Mar-2000 #sequence_revision 31-Mar-2000 #text_change 19-Jan-2001 C;Accession: A81027

LgtE NMB1926 [imported]

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A;Gene:
C;Superf
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A;Experimental source:
                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Molecule type: DNA
A; Residues: 1-268 < PAR>
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Nature 404,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          R; Parkhill, J.; Achtman, M.; James, Holroyd, S.; Jagels, K.; Leather,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            C;Date: 05-May-2000 #sequence_revision 05-May-2000 #text_change 02-Feb-2001
C;Accession: B81971
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C; Species: Neisseria meningitidis
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           C; Accession:
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Matches
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                                                                                                                          LETMFMHVLTSPSGVADYGGRAFPLLESEHCGTAGYIISRKAMRFFLDRFAVLPPERLHP
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PANTEKHRLIRALTKIGRE----REKRRQRR-EQLIGKIIVPFQ
                                                                           VDLMMFGNPDDREGMPVCQLNPALCAQELHYAKFHDQNSALGSLIEHDRRLNRKQQWRDS
                                                                                                                                                                    VEKACFMSHAVLWKQALDEGLPY IAVFEDDVLLGEGAEKFLAEDAWLQERFDPDSAF IVR
                                                                                                                                                                                     VEKACFMSHAVLWEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQERFDPDSAFVVR 120
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                                                                                                          LETMFMHVLTSPSGVADYCGRAFPLLESEHWGTAGYIISRKAMRFFLDRFAVLPSERLKA
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                                             VDWMLFSSFLDKGGMTVCQLTPALCV------
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                                                                                                                                                                                                                                                                                            68.3%; Score 997.5; 72.9%; Pred. No. 2.3; tive 24; Mismatches
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foule, S.;
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                                             -QSETLPSQLKNGRQESYRN--RRS
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Mungall, K.; Quail,
              279
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M.A.;
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Rajandre
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A; Gene: lgtE
C; Superfamily
C; Keywords: g
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$7/815
$1/900$7 transferase E (EC 2.4.-.-) - Neisseria meningitidis
$1/900$7 transferase E (EC 2.4.-.-) - Neisseria meningitidis
$1/900$7 Species: Neisseria meningitidis
$1/900$7 C; Accession: $7/815
$1/900$7 Feb-1998 #text_cha
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A;Gene: NMB1926
A;Gene: NMB1926
C;Superfamily: lipopolysaccharide biosynthesis-associated
C;Superfamily: Lipopolysaccharide biosynthesis-associated
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A;Status: preliminary
A;Molecule type: DNA
A;Residues: 1-280 <TET>
A;Cross-references: GB:AE002541;
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A;Title: Molecular analysis of a locus for the biosynthesis at A;Reference number: S70812; MUID:96414473; PMID:8817494
A;Accession: S70815
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A; Residues: 1-276 < JEN>
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                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Status: preliminary; nucleic acid
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Best Local
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VDLMMFGNPDDREGMPVCQLNPALCAQELHYAKFHDQNSALGSLIEHDRRLNRKQQWRDS
                                                                  LETMFMHVLTSPSGVADYGGRAFPLLESEHCGTAGYIISRKAMRFFLDRFAVLPPERLHP
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                                                                                                                                  VEKACEMSHAVLWEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQERFDPDSAFVVR 120
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                                                  LETMFAKVIVRPDKVLNYENRSFPLLESEHWGTAGYIISREAMRFFLERFAVLPARVDKA
                                                                                                                    VEKACFMSHAVLWKQALDEGLPYVAVFE---
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Pred. No. 5.66
28; Mismatches
                                                                                                                                                                                                                                                   Score 881.5;
Pred. No. 1.2e
27; Mismatches
                                                                                                                                                                                                                                                                                                                                                                                                                                       sequence not shown
                                                                                                                 -LGKDAEKFLAEDTWLEERFDKDSAFIVR
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                                                                                                                                                                                                                                                                   1.2e-73;
                                                                                                                                                                                                                                                                                                                                                                                      PIDN:AAC44086.1; PID:g973187
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R.High, N.J.; Jennings, M.P.; Moxon, E.R.
Mol. Microbiol. 20, 165-174, 1996
Mol. Microbiol. 20, 165-174, 1996
A;Title: Tandem repeats of the tetramer 5'-CAAT-3' present
A;Reference number: S71024; MUID:97014379; PMID:8861214
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C;Species: Haemophilus
C;Date: 15-Feb-1997 #se
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A; Residues: 1-266 < HIG>
                                                                                                                                                                                                                                                                                                                                                                                                                    A; Gene:
                                                                                                                                                                                                                                                                                                                                                                                                                                                   A; Experimental
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232
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                                                                                                                                                                                                                                                                                                                                                                                                                    lic2B
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                                                                                                                                                                                                                                             PANTFKHRLIRALTKIGREREKRRORREQLIGKIIVPFQ
                                                                                        LMMFGNPDDREGMPVCQLNPALCAQELHYAKFHDQNSALGSLIEHDRR--LNRKQQWRDS
                                                                                                                                                                                  KACFMSHYMLWQKCFSEDLPYIYIFEDDVLLGENADKFLAEDEWLEEAFKQTDKFILRFE
--RTLKTVLISLAGK--PKKILRKIYRKLFISKHIVPFR
                                                           LLMF----NIFNQSTYQVSPGVCVQE----GQLYPKDIKLHSQLETERQKYLSVKKK----
                                                                                                                      TFLNFSKCKDKKIKPYSGRKILKLVSENCGAAGYVISREAVKQLSAHICSLTSNHLLAID
                                                                                                                                      VDWMMFTYFFDKEGMPVYQVNPALCTQELHYAKFLSKNSMLGSDLEKDREQER---
                                                                                                                                                                                                                                                                                                            109;
                                                                                                                                                                                                                                                                                                                         Similarity
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                                                                                                                                                                                                                                                                                                            Conservative
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ilus influenzae
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                                                                                                                                                                                                                                                                                                                       Score 461; DB 2;
Pred. No. 7.2e-35;
                                                                                                                                                                                                                                                                                                          Mismatches
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266
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lipopolysaccharide biosynthesis protein lic2A - Haemophilus influenzae C;Species: Haemophilus influenzae C;Species: Haemophilus influenzae C;Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 28-Jul-2000 C;Accession: A64077; S15282; S39576 K;Fileischmann, R.D.; Adams, M.D.; White, O.; Clayton, R.A.; Kirkness, E.F.; Kerlavage; Gocayne, J.D.; Scott, J.; Shirley, R.; Liu, L.I.; Glodek, A.; Kelley, J.M.; Weidman, D.M.; Brandon, R.C.; Fine, L.D.; Fritchman, J.L.; Fuhrmann, J.L.; Geoghagen, N.S.M. Science 269, 496-512, 1995 McDonald, L.A.; Small, K.V.; Fraser, C.M.; Smith, H.O.; Vente A;Title: Whole-genome random sequencing and assembly of Haemophilus influenzae Rd. A;Reference number: A64000; MUID:95350630; PMID:7542800

A64077

A; Experimental source: s R; Cope, L.D.; Yogev, R.;

strain Rd K

Rd KW20

A;Cross-references: GB:U32736; GB:L42023; NID:g1573519; PIDN:AAC22208.1; PID:g1573535

J.L.;

M.S.;

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A; Molecule type: DNA A; Residues: 1-302 <TIGR>

A;Status: nucleic acid sequence

not shown;

translation not shown

A; Reference number: A; Accession: A64077

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A;Cross-
C;Geneti
A;Start
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R;Fleischmann, R.D.; Adams, M.D.; White, O.; Clayton, R.A.; Kirkness, E.F.; Kerlayage, ; Gocayne, J.D.; Scott, J.; Shirley, R.; Liu, L.I.; Glodek, A.; Kelley, J.M.; Weldman, , D.M.; Brandon, R.C.; Fine, L.D.; Fritchman, J.L.; Fuhrmann, J.L.; Geoghagen, N.S.M. Science 269, 496-512, 1995

A;Authors: Gnehm, C.L.; McDonald, L.A.; Small, K.V.; Fraser, C.M.; Smith, H.O.; Venter A;Title: Whole-genome random sequencing and assembly of Haemophilus influenzae Rd. A;Reference number: A64000; MUID:95350630; PMID:7542800
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A; Molecule type: DNA
A; Residues: 1-28,'N', 30-40,45-105,'L',107-150,'R',152-302 <COP>
A; Residues: 1-28,'N', 30-40,45-105,'L',107-150,'R',152-302 <COP>
A; Cross-references: EMBL:X56903; NID:g48811; PIDN:CAA40221.1; PI
A; Experimental source: Strain DL42
A; Note: it is uncertain whether Met-1 or Met-11 is the initiato:
A; Note: it is uncertain whether Met-1 or Met-11 is the initiato:
A; Note: it is uncertain whether Met-1 or Met-11 is the initiato:
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A; Note: it is uncertain whether Met-1 or Met-11 is the initiato:
A; Note: it is uncertain whether Met-1 or Met-11 is the initiato:
A; Note: it is uncertain whether Met-1 or Met-11 is the initiator.
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A; Note: it is uncertain whether Met-1 or Met-11 is the initiator.
A; Note: it is uncertain whether Met-1 or Met-11 
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A;Residues: 1-28','N',30-40,49-105,'L',107-150,'R',152-255,'P',257-273,'D',275-302
A;Cross-references: EMBL:L19441; NID:g305379; PIDN:AAA65534.1; PID:g305380
A;Experimental source: strain RM7004
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A;Title: The role of a repetitive DNA motif
A;Reference number: S39576; MUID:95020659; P
A;Accession: S39576
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                                                                                                                                                                                              Status: nucleic acid sequence not shown; translation not shown
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Superfamily:
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;Title: Molecular cloning of a gene involved in lipooligosaccharide biosynthesis;Reference number: S15282; MUID:92065807; PMID:1956289
                                                                              Cross-references:
                                                                                                                                                        Molecule type: DNA
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                                                                                                                       <TIGR>
                                                                              GB:U32760;
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                                                                              GB:L42023; NID:g1573764;
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Pred. No. 7.9e-31;
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PMID:7523834
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                                                                              PIDN: AAC22423.1;
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                                                                          PID:g1573773;
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R;DelVecchio, V.G.; Kapatral, V.; Redkar, R.J.;

Proc. Natl. Acad. Sci. U.S.A. 99, 443-448, 2002

A;Title: The genome sequence of the facultative

A;Reference number: AD3252; PMID:11756688

A;Accession: AD3304
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AD3304
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    A; Molecule type: DNA
A; Residues: 1-268 <KUR>
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        A;Status: preliminary
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          lipooligosaccharide biosynthesis protein lic2B [imported] -
C; Species: Brucella melitensis
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                                                                                                                                                                                                                                                                                                                                                                                Query Match
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211
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                                                                 167
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                                                                                                                                                                    104 DTWLQERFDPDSAFVVRLETMFMHVLTSPSGVADYGGRAFPLLESEHCGTAGYIISRKAM
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                                                                                                                                                                                                                          ----VPGLSAHPYLSGVEKACFMSHAVLWEQALDEGVPYIAVFEDDVLLGEGAEQFLAE
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                           GSLIEHDRRLNRKQQ-----WRDSPANTFKHR-----LIRALTKIGR
                                                                 RKLLP----LMEKVSAPVDHFLF-DPNDGPFNDFEIYQISPAICRQ-----
                                                                                               RFFLDRFAVLPPERLHPVDLMMFGNPDDR---EGMPVCQLNPALCAQELHYAKFHDQNSAL
                                                                                                                                   DHWI-----PKQADIVKIDAYGHEVLIS-NPVKNEGPYSISRLRSRHLQTGGYVVSREAA 166
                                                                                                                                                                                                      SKEWPAP-----LSPAEIGCFLSHRKCLEKIAAGEDAYAAVFEDDIRLSQGSSRFLAS 112
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   --PDNPFESSL----QEGRDRVHGNQRKSSILEKI 263
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                                                                                                                                                                                                                                                                                                                                              43;
                                                                                                                                                                                                                                                                                                                                            Score 231.5; DB 2;
Pred. No. 1.1e-13;
3; Mismatches 95;
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Pred. No. 2.6e-17;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Hagius,
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Hagius, S.; C
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257
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D.; Let
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lpsA protein [imported] - Brucella melitensis (strain 16M)
C;Species: Brucella melitensis
C;Date: 01-Feb-2002 #sequence_revision 01-Feb-2002 #text_change 01-Feb-2002
C;Accession: AH3417
R;DelVecchio, V.G.; Kapatral, V.; Redkar, R.J.; Patra, G.; Mujer, C.; Los, T.; Ivanova, Mazur, M.; Goltsman, E.; Selkov, E.; Elzer, P.H.; Hagius, S.; O'Callaghan, D.; Letess Proc. Natl. Acad. Sci. U.S.A. 99, 443-448, 2002
A;Title: The genome sequence of the facultative intracellular pathogen Brucella melitens A;Reference number: AD3252; PMID:11756688
A;Accession: AH3417
                                                            A; Gene
A; Map
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C;Genetics:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A;Title: Genomic sequence comparison of two unrelated isolates of the human gastric path A;Reference number: A71800; MUID:99120557; PMID:9923682
A;Accession: E71916
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                                                                                                      C P P
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A; Residues: 1-721 <KUR>
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A; Residues: 1-332 <ARN>
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C; Species: Helicobacter pylori
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                                                                                                                     Experimental source:
                                                                                                                                          Cross-references: GB:AE008917; PIDN:AAL52507.1;
                                                                                                                                                                                                     Status: preliminary
                                                                                 Gene: BMEI1326
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                                                            position:
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/ Match
Local Similarity
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      29 FQFFDALMPSER-LERAMAELVPGLSA-----HPY----LSGVEKACFMSHAVLWEQAL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                jhp0562
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 KLDQP-VVILEDDVTLESHFMQAL-EDC-LKSPFD-----FVRLYGCYWYYHETKF-HVL 145
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FQIFDAISPKHQDFEKLLQELYNAQSLLQSDWYHSYVGAGLTLPELGCYLSHYLLWKECV
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  GREREKRRORREQLIGKIIVPFO
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        AFFLEHFYLTSVYVASTAGYYLTPKGAKTFIE--ATESFKIIEPVDMFM----DNSAYHD
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            VCQLNPALCAQELHYAKFHDQNSALGSLIEHDRRLNRKQQWRDSPANTFKHRLIRALTKI
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            ----EH------CGTAGYIISRKAMRFFLDRFAVLPPERLHPVDLMMFGNPDDREGMP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       DEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQERFDPDSAFVVRL-----ETMFMHVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ---NAKKRLNAFQQYSKQYAPLK 327
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   --PREFVFPPFDHSFKNNPILEKFKKFFDVSRFLNLSTHKVIHYILKKIQKSYYATHEKE
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                                                                                                                         strain
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23.8%;
  25 8
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  . 0%;
                                                                                                                         16M
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  Score
Pred.
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Score 128; DB 2;
Pred. No. 0.00051;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Mismatches
116.5; DB
No. 0.016;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               108;
                                                                                                                                          PID:g17983318; GSPDB:GN00190
                  2;
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                  Length
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               102;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Yovis, G.F.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               17;
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A;Title: Prediction of the coding sequences of unidentified
A;Reference number: Z14086; MUID:98290545; PMID:9628581
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             hypothetical protein KIAA0584 - human (fragment)
C;Species: Homo sapiens (man)
C;Date: 01-reb-1999 #sequence_revision 01-Feb-19
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T00343
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                                                                                                                                                                                                                                                                                                                               A;Cross-references: EMBL:AB011156; NID:g3043691; PIDN:BAA25510.1; PID:g3043692
A;Experimental source: brain
                                                                                                                                                                                                                                                                                                                                                                                                                                                                 R; Nagase, T.; Ishikawa, K.; Miyajima, N.; Tanaka, A.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  C; Accession: T00343
                                                                                                                                                                                                                                                                                                                                                             A; Molecule type: mRNA
A; Residues: 1-738 <NAG>
                                                                                                                                                                                                                                                                                                                                                                                        A; Status: preliminary; translated
                                                                                                                                                                                                                                                                       Query Match
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627
                               174
                                                           577 LIYIGRKRMQVKEPEKAVPNVAN-
                                                                                                                 518 LTRG-EIGCFLSHYSVWKEVIDRELEKTLVIEDDVRFEHQFKKKLMKLMDNIDQAQLDWE
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                                                                                                                                                                             458 MINLKRRKDRRDRMLRTLYEQEIEVKIVEAVDGKALNTSQLKALNIEMLPGYRDPYSSRP
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   168 DRFAVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             112 DPDSAFYVRL----ETMFMHVLTSPSGVADYGGRAFPLLESEHCGTAGYIISRKAMRFFL 167
                                                                                                                                    Local
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                                                                                                                                                                                                          5 VISLASAAERRAHIAATFGSRGIPFQFFDAL----MPSERLERAMAELVPG----LSAHP 56
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    ഗ
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       SALSTM
                            PPERLHPVD 182
                                                                                    SAFVVRLETMEMHVLTSPSGVADYGGRAFPLLESEHC-GTAGYIISRKAMRFFLDRFAVL
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 D-----VVKLVNHRSPLFMSLLETDAG--DRIGRA---IHGPQGSAAAYLVSREGARKLL 184
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VISLASAAERRAHIAATFGSRGIPFQF--FDALMPSERLERA--
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LSAHPYLSGVEKACFMSHAVLWEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQERF 111
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    VINMASQPAAYKTVAASIEAYGQGFQLHRIDAVNGHTATQRIGIDDARFDAINGREMLPG
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 48;
                                                                                                                                                                                                                                          Similarity 23.3
44; Conservative
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            -----EYGCYRSHSKALESFLSDGSPYGLILEDDVVFTETTSARIHDIIKSLPDF
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         190
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     173
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                                                                                                                                                                                                                                                        7.3%;
                                                                                                                                                                                                                                          40;
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                                                                                                                                                                                                                                                      Score 107; DB Pred. No. 0.13;
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                                                                                                                                                                                                                                                                                                                                                                                        GB/EMBL/DDB
                                                           -LVEADYSYWTLGYVISLEGAQKLV---GAN
                                                                                                                                                                                                                                                                    2;
                                                                                                                                                                                                                                          83;
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                                                                                                                                                                                                                                                                      Length 738
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                                                                                                                                                                                                                                                                                                                                                                                                                                   genes.
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; Kerlavage M.; Weidman Jen, N.S.M.

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A;Experimental source: strain Rd KW20
A;Experimental source: strain Rd KW20
R:McLaughlin, R.; Abu Kwalk, Y.; Young, R.; Spinola, S.; Apicella, M.
submitted to the EMBL Data Library, June 1992
A;Description: Characterization and sequence of the lsg locus from Haemophilus influenza
                                                                                                                                                                                                                                                                                       C;Superfamily:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       R;Tomb, J.F.; White, O.; Kerlavage, A.R.; Clayton, R.A.; Sutton, G.G.; Fleischmann, R. Peterson, S.; Loftus, B.; Richardson, D.; Dodson, R.; Khalak, H.G.; Glodek, A.; McKerson, J.D.; Kelley, J.M.; Cotton, M.D.; Weldman, J.M.; Fujii, C.; Bowman, C.; Watthey, Nature 388, 539-547, 1997
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A;Residues: 11-26,'K',28-39,'I',41-55,'S',57-111,'L',113-136,'N',138-139,'N',141-143,
A;Cross-references: EMBL:M94855; NID:g148931; PIDN:AAA24981.1; PID:g148935
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     A; Experimental source: strain A2
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       A; Accession:
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         ipopolysaccharide biosynthesis-associated protein lex2B - Helicobacter pylori
                                                                                                                                                                                                                                                                                                                                                                                    ; Molecule type: DNA
; Residues: 1-273 < TOM>
                                                                                                                                                                                                                                                                                                                                                                                                                                                        Authors: Wallin, E.; Hayes, W.S.; Borodovsky, M.; Karpk, P.D.; Smith, H.O.; Fraser, Title: The complete genome sequence of the gastric pathogen Helicobacter pylori. Reference number: A64520; MUID:97394467; PMID:9252185; Accession: B64623
                                                                                                                                                                                                                                                                                                                Start codon:
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           ;Date: 10-Sep-1999 #sequence_revision 10-Sep-1999 #text_change 09-Jun-2000
                                                                                                                                                                                            Matches
                                                                                                                                                                                                                Query Match
Best Local Similarity
                                                                                                                                                                                                                                                                                                                                                                Cross-references:
                                                                                                                                                                                                                                                                                                                                                                                                                                 Status: preliminary; nucleic acid sequence not shown; translation not shown
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           126 LEAEIILLGOSKINDFNDFDLEINYPTTF-SFLCKKTGDVNY---AFP-YKSYFAGTVGY 180
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                111
  96
                                          64 ----- ACFMSHAVLWEQALDEGVPYIAVFEDDVLLGEGAEQFLAEDTWLQERFDPDSAF 117
                                                                                               38
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 QNSALGSL--IEHDRRLNRKQQWRDSPANTFKHRLIR-ALTKI 256
MSLGELGCYASHYSLWEKCIELN-EAICILEDDITLKEDFKEGL---DFLEKHI--QELG 149
                                                                                             QIFDAIY-SKTFEGGLHPLVK-KHLHPYFITQNIKDMGITTNLISEVSKFYYALKYHAKF 95
                                                                                                                                          QFFDALMPSERLERAMAELVPGLSAHPY------LSGVEK------
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   LIKKSAARRFIQQISQNKPFWLAD-DFLLFEQ-
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      LSGVEK---ACFMSHAVLWEQALDEG----VPYIAVFEDDVLLGEGAEQFLAEDTWLQER 110
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        LKKYLISLDKDIQRR----ELFFSQKNTEDFQVFSAINTMQKDWDELAAIFNIEQFKAH-Y 67
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RNKVVRPLIVIENPVLISNLESVRGSLSNNLLKKLMKYPLKKI 258
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              IISRKAMRFFLDRFAVLPPERLHPVDLMMFGNPDDREGMPVCQLNPALCAQELHYAKFHD 216
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Similarity 65; Conserv
                                                                                                                                                                                                                                                                                    lipopolysaccharide biosynthesis-associated protein
                                                                                                                                                                                          Conservative
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                                                                                                                                                                                                                                                                                                                                                           GB:AE000594; GB:AE000511; NID:g2313957; PIDN:AAD07876.1; PID:g23139
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                                                                                                                                                                                                                6.8%;
23.7%;
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Search completed: May 27, 2003, 18:18:10 Job time : 47 secs

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HAACT_Y
Y514_SYNY3
XNR_MYCPN
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B3A2_RABIT
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MEDLINE-2022556; PubMed-10761919;

Parkhill J., Achtman M., James K.D., Bentley S.D., Churcher C.,

Klee S.R., Morelli G., Basham D., Brown D., Chillingworth T.,

Davies R.M., Davis P., Devlin K., Feltwell T., Hamlin N., Holroyd

Jagels K., Leather S., Moule S., Mungall K., Quail M.A.,

Rajandream M.A., Rutherford K.M., Simmonds M., Skelton J.,

Whitehead S., Spratt B.G., Barrell B.G.;

"Complete DNA sequence of a serogroup A strain of Neisseria
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Pfam; PF01755; Glyco_transf_25;
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Nature 404:502-506(2000).
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Query Match Best Local Matches

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88.5%; ilarity 90.3%; Conservative

Score 1293; D Pred. No. 2.4e 7; Mismatches

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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         STRAIN-MC58 / Serogroup B;
MEDLINS-96414473; PubMed-8817494;
MEDLINS-96414473; PubMed-8817494;
Jennings M.P., Hood D., Peak I.R.A., Virji M., Moxon E.R.;
"Molecular analysis of a locus for the biosynthesis and phase-variable expression of the lacto-N-neotetraose terminal lipopolysaccharide
                Lipopolysaccharide Complete proteome. CONFLICT 97
                                                                                                                                                     use by non-profit institutions as long as its content is modified and this statement is not removed. Usage by and for entities requires a license agreement (See http://www.isb-sib.or send an email to license@isb-sib.ch).
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15-JUN-2002 (Rel. 41, Last annota
Lacto-N-neotetraose biosynthesis
LGTB OR NMB1928.
                                                               InterPro; IPR002654; GT_25.
Pfam; PF01755; Glyco_transf_25;
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MEDLINE-20175755; PubMed-10710307;
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Bacteria; Proteobacteria; beta sul
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AE002541; AAF42257.
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Matches 209
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Pfam; PF01755; Glyco_transf_25; 1.

Lipopolysaccharide biosynthesis; Transferase; Glycosyltransferase.

SEQUENCE 280 AA; 32420 NW; F043597BA3044407 CRC64;
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-!- SIMILARITY: BELONGS
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RC STRAIN-MC58 / Serogroup B;

RC MEDLINE-20175755; PubMed-10710307;

RA Tettelin H., Saunders N.J., Heidelberg J., Jeffries A.C., Nelson K.L.,

RA Testelin H., Saunders N.J., Heod D.W., Peden J.F., Dodson R.J.,

RA Eisen J.A., Ketchum K.A., Hood D.W., Pederson J.D., Hickey E.K.,

RA Haft D.H., Salzberg S.L., White O., Fleischmann R.D., Dougherty B.A.,

RA Mason T., Clecko A., Parksey D.S., Blair E., Clittone H., Clark E.B.,

RA Gill J., Scarlato V., Masignani V., Pizza M., Grandi G., Sun L.,

RA Gill J., Scarlato V., Masignani V., Pizza M., Grandi G., Sun L.,

Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.;

The Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.;

The Smith H.O., Fraser C.M., Moxon E.R., Rappuoli R., Venter J.C.;
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CONFLICT
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SEQUENCE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE-96414473; PubMed-8817494; Jennings M.P., Hood D., Peak I.R.A., Virji M., Moxon E.R.; Jennings M.P., Hood D., Peak I.R.A., Virji M., Moxon E.R.; Molecular analysis of a locus for the biosynthesis and phase-variable expression of the lacto-N-neotetraose terminal lipopolysaccharide structure in Neisseria meningitidis."; Mol. Microbiol. 18:729-740(1995).
                                                                                                    InterPro; IPR002654; GT_25.
Pfam; PF01755; Glyco_transf_25; 1
Lipopolysaccharide biosynthesis;
Complete proteome.
                                                                                                                                                                                                                                                                                                                           modified and this statement is not removed. entitles requires a license agreement (See or send an email to license@isb-sib.ch).
                                                                                   CONFLICT
                                                                                                                                                                                                                      TIGR;
                                                                                                                                                                                                                                                                                                                                                                                                                                        between the Swiss Institute of Bioinformatics Institute.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                    This SWISS-PROT entry is copyright. It is produced through a collaboration between the Swiss Institute of Bioinformatics and the EMBL outstation -
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       - I - SIMILARITY: BELONGS TO THE GLYCOSYLTRANSFERASE FAMILY 25.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        - I - PATHWAY: BIOSYNTHESIS OF THE TERMINAL LACTO-N-NEOTETRAOSE
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STRAIN-MC58 / Serogroup B;
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Bacteria; Proteobacteria; beta subdivision;
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280 AA;
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Best Local
                                                                                                                                               Matches
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Submitted (JAN-1996) to the EMBL/GenBank/DDBJ databases.
-I- FUNCTION: INVOLVED IN EXTRACELIULAR LIPOOLIGOSACCHARIDES (LOS)
BIOSYNTHESIS AND VIRULENCE EXPRESSION. INVOLVED IN THE SYNTHES
OF THE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING GA
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STRAIN-RM 7004 / S
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Pfam; PF01755; Glyco_transf_25; 1.
Transferase; Glycosyltransferase; Virulence.
SEQUENCE 266 AA; 31131 MW; 0C68AE9BA249E
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; Pred. No. 2.1e-35;
46; Mismatches 106
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Pred. No. 1.3e-78;
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                                                                                        C STRAIN-RM 7004 / Serotype B;

X MEDLINE-95020659; PubMed-7522834;

A High N.J., Deadman M.E., Moxon E.R.;

The role of a repetitive DNA motif (5'-CAAT-3') in the variable rexpression of the Haemophilus influenzae lipopolysaccharide epit alpha Gal(1-4)beta Gal.";

Mol. Microbiol. 9:1275-1282(1993).

L Mol. Microbiol. 9:1275-1282(1993).

C -!- FUNCTION: INVOLVED IN EXTRACELLULAR LIPOOLIGOSACCHARIDES (LO BIOSYNTHESIS AND VIRULENCE EXPRESSION. INVOLVED IN THE SYNTH COOPER DISCONTINGE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OF THE LOS MOLECULE BY ADDING COPTHE OLIGOSACCHARIDE MOIETY OLIGOSACCHAR
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the Euro
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McCracken G.H. Jr., Hansen E.J.;
"Molecular cloning of a gene involved
biosynthesis and virulence expression
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Fleischmann R.D., Adams M.D., White O., Clayton R.A., Kirkness E.F., Kerlavage A.R., Bult C.J., Tomb J.-F., Dougherty B.A., Meriick J.M., McKenney K., Sutton G., Fitzhugh W., Fields C.A., Gocayne J.D., Scott J.D., Shirley R., Liu L.-I., Glodek A., Kelley J.M., Weidman J.F., Phillips C.A., Spriggs T., Hedblom E., Cotton M.D., Utterback T.R., Hanna M.C., Nguyen D.T., Saudek D.M., Brandon R.C., Fine L.D., Fritchman J.L., Fuhrmann J.L., Geoghagen N.S.M., Gnehm C.L., McDonald L.A., Small K.V., Fraser C.M., Smith H.O.,
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                        SWISS-PROT entry is copyright. It is produced through a collaboration -
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307; PubMed=1956289;
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                              Potter M.D., "Cloning and
                                      SEQUENCE FROM N.A.
STRAIN-Serotype A1;
MEDIAINS-5301198; PubMed-7781993;
Potter M.D., LO R.Y.C.;
                                                                                                             Pasteurella haemolytica.
Bacteria; Proteobacteria;
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  involved in lipopolysaccharide biosynthesis.";
MS Microbiol. Lett. 129:75-81(1995).
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Best Local
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SEQUENCE FROM N.A.

SEQUENCE FROM N.A.

STRAIN-Rd / KW20 / ATCC 51907;

MEDLINE-95350630; PubMed-7542800;

Fleischmann R.D., Adams M.D., White O., Clayton R.A., Kirkness Kerlavage A.R., Bult C.J., Tomb J.-F., Dougherty B.A., Merrick McKenney K., Sutton G., Fitzhugh W., Flelds C.A., Gocayne J.D., Scott J.D., Shirley R., Liu L.-I., Glodek A., Kelley J.M.,
                                                                                                                                                                                                                     057125; 005033;
01-NOV-1997 (Re
01-NOV-1997 (Re
15-JUN-2002 (Re
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STRAIN-Serotype Al;
MEDLINE-91358346; PubMed-1885539;
Abdullah K.M., Lo R.Y.C., Mellors A.;
"Cloning, nucleotide sequence, and expression
                                                                                                                                                 Haemophilus influenza...
Parteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               Interpro; IPR002654; GT_25.

Pfam; PF01755; Glyco_transf_25; 1.

Lipopolysaccharide biosynthesis; Transferase; SEQUENCE 263 AA; 30871 MW; B07C39ECIDA603
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J. Bacteriol. 173:5597-5603(1991).

-I- FUNCTION: INVOLVED IN THE BIOSYNTHESIS

OF THE LIPOPOLYSACCHARIDE MOLECULE.

-I- SUBCELLULAR LOCATION: CYTOPLASMIC. ASSE

OF THE CYTOPLASMIC MEMBRANE (POTENTIAL)
                                                                                                                                  NCBI_TaxID=727;
                                                                                                                                              Bacteria; P.
Haemophilus
                                                                                                                                                                                           Hypothetical HI0765.
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93; Conserv
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(Rel. 41, Last ann
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7; Mismatches
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tion update)
HI0765 (EC:
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Best Local S
Matches 80
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P71398; Q48213;
30-MAY-2000 (Rel. 3
30-MAY-2000 (Rel. 3
15-JUN-2002 (Rel. 4
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             RG.; CHARLEY BELONGS TO THE GLYCOSYLTRANSFERASE FAMILY 25.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            Utterback T.R., Hanna M.C., Fine L.D., Fritchman J.L., Gnehm C.L., McDonald L.A., Venter J.C.;
                                                McLaughlin R.,
                                                                                                          Bacteria; Proteobacteria;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             EMBL; U32760; AAC22423.1; -. TIGR; HI0765; -.
SEQUENCE
                    Submitted
                             "Characterization and influenzae.";
                                                         STRAIN=
                                                                  SEQUENCE FROM N.A.
                                                                                      NCBI_TaxID=727;
                                                                                                 Haemophilus.
                                                                                                                    Haemophilus influenzae
                                                                                                                             HI1697.
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Hypothetical protein; Transferase; Glycosyltransferase;
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N.A
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Hanna M.C., Nguyen D.T., Saudek D.M.,
                                               Abu
                                                                                                                                                                                      STANDARD;

    39, Created)
    39, Last sequence update)
    41, Last annotation update
    e protein 4.

                                               Kwaik Y.,
                                                                                                                                                                                                                                                                                                                                                                                                                                                                           32481 MW;
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                   EMBL/GenBank/DDBJ databases
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ce of t
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Pred. No. 8.
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                                     , Spinola
lsg locus
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RESULT 11
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MEDLINE=95350630; PubMed=7542800;

Fleischmann R.D., Adams M.D., White O., Clayton R.A., Kirkness Kerlavage A.R., Bult C.J., Tomb J-F., Dougherty B.A., Merrick McKenney K., Sutton G., Fitzhugh W., Fields C.A., Gocayne J.D., Scott J.D., Shirley R., Liu L.-I., Glodek A., Kelley J.M., Weidman J.F., Phillips C.A., Spriggs T., Hedblom E., Cotton M.D Utterback T.R., Hanna M.C., Nguyen D.T., Saudek D.M., Brandon R Fine L.D., Fritchman J.L., Fuhrmann J.L., Geoghagen N.S.M., Gnehm C.L., McDonald L.A., Small K.V., Fraser C.M., Smith H.O.,
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Science 269:496-512(1995)
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A., Merrick J.M.,
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R.C.,
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(EF-G)

Last sequence update)

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-I- FUNCTION: THIS PROTEIN PROMOTES THE GTP-DEPENDENT TRANSLOCATION OF THE NASCENT PROTEIN CHAIN FROM THE A-SITE TO THE P-SITE OF THE OF 
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 MEDLINE-20150255; PubMed-10684935;
Read T.D., Brunham R.C., Shen C., Gill S.R., Heidelb White O., Hickey E.K., Peterson J., Utterback T., Be Linher K., Weidman J., Khouri H., Craven B., Bowman Gwinn M., Nelson W., DeBoy R., Kolonay J., McClarty Eisen J., Fraser C.M.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                FUSA OR CPN0550 OR CP0202.
Chlamydia pneumoniae (Chlamydophila pneumoniae).
Bacteria; Chlamydiales; Chlamydiaceae; Chlamydophila
                                                                                                                                                                                                                                                                                     Pfam;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      This
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   "Genome sequences of Chlamydia trachomatis pneumoniae AR39.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          MEDLINE=99206606; PubMed=10192388;
Kalman S., Mitchell W., Marathe R., Lammel C., Fan J., Hyman R.W., Olinger L., Grimwood J., Davis R.W., Stephens R.S.;
"Comparative genomes of Chlamydia pneumoniae and C. trachomatis.";
                                                                                                                                                 Elongation
                                                                                                                                                                     PROSITE;
                                                                                                                                                                                                                             PRINTS; PR00315;
                                                                                                                                                                                                                                                                                                                                                                                                  TIGR;
                                                                                                                                                                                                                                                                                                                                                                                                                    PHCI-2DPAGE; Q9Z802; -.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  entities requires a license agreement
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      modified and this statement is not removed
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    between
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EF-G/EF-2 SUBFAMILY.
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AE002181; AAF
AP002547; BAA
P13551; 1DAR
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pean Bioinformatics Institute. There are no restrictions
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IPR004161;
IPR000795;
IPR005225;
                                                                                                                                                                     PS00301;
                                                                                                                                                                                   TIGR00231; small_GTP; 1.
TIGR00484; EF-G; 1.
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82
136
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5; ELONGATNFCT.
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EFG_C; 1.
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AAF38074.1;
BAA98756.1;
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                                                                                                                                             biosynthesis;
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                                                                                                                                             GTP-binding;
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Y.K., Bass S.,
Dodson R.,
Salzberg S.L.,
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RESULT 12
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Best Local S
Matches 63
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01-NOV-1997 (Rel. 3
01-NOV-1997 (Rel. 3
16-OCT-2001 (Rel. 4
                                                                                                                                                                                                                                                                                                                                      Kaneko T., Sato S., Kotani H., Tanaka A., Asamizu E., Nakamura Y., Miyajima N., Hirosawa M., Sugiura M., Sasamoto S., Kimura T., Hosouchi T., Matsuno A., Muraki A., Nakazaki N., Naruo K., Okumura S., Shimpo S., Takeuchi C., Wada T., Watanabe A., Yamada M., Yasuda M., Tabata S.; Yamada M., Yasuda M., Tabata S.; "Sequence analysis of the genome of the unicellular cyanobacterium Synechocystis sp. strain PCC6803. II. Sequence determination of the entire genome and assignment of potential protein-coding regions.", DNA Res. 3:109-136(1996).
         InterPro; IPR000291; Dala_Dala_ligase Pfam; PF01820; Dala_Dala_ligas; 1. TIGRPAMS; TIGR01205; D_ala_D_alaTIGR;
                                                                                                                                                                                                                        + D-alanyl-D-alanine.
- PATHWAY: ALONG WITH ALANINE RACEMASE, IT MAKES UP THE D-ALANINE RACEMASE, IT MAKES UP THE D-ALANINE BRANCH OF THE PEPTIDOGLYCAN BIOSYNTHETIC ROUTE (BY SIMILARITY)
-!- SUBCELLULAR LOCATION: Cytoplasmic (By Similarity).
-!- SIMILARITY: BELONGS TO THE D-ALANINE--D-ALANINE LIGASE FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        UI-NOV-1997 (Rel. 35, Last sequence update)
16-OCT-2001 (Rel. 40, Last annotation update)
D-alanine--D-alanine ligase (EC 6.3.2.4) (D-alanylalanine synthetase)
(D-Ala-D-Ala ligase).
                                                        EMBL; D90908; BAA17677.1;
HSSP; P07862; 1IOV.
                                                                                            or send an email
                                                                                                                      entities
                                                                                                                                      use by non-profit institutions as long modified and this statement is not removed
                                                                                                                                                                This SWISS-PROT entry is copyright. It is produced throubetween the Swiss Institute of Bioinformatics and the the European Bioinformatics Institute. There are no re
                                                                                                                                                                                                                                                                                                          -i- FUNCTION: CELL WALL FORMATION (BY SIMILARITY).
-i- CATALYTIC ACTIVITY: ATP + D-alanine + D-alanin
                                                                                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE FROM N.A. MEDLINE-97061201; PubMed-8905231;
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Bacteria; Cyanobacteria;
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                                                                                                    requires a license agreement (san email to license@isb-sib.ch).
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Chroococcales; Synechocystis
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Pred. No. 2.4;
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Best Local S
Matches 43
                                                   EMBL;
                                                                                                                                                                       Nature New Biol. 231:37-41(1
-1- FUNCTION: RESPONSIBLE FO
GROWTH OF BACTERIOPHAGE
                                                                                                                                                                                                                                                                                                                  Shimizu H., Saitoh Y., Suda Y., Uehara K., Sampei G., Mizobuchi I "Complete nucleotide sequence of the F plasmid: its implications organization and diversification of plasmid genomes."; Submitted (APR-2000) to the EMBL/GenBank/DDBJ databases.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   PROSITE; PS00844;
Ligase; Cell wall;
SEQUENCE 354 AA;
  SEQUENCE
                                                                                                                use
                                                                                                                           the
                                                                                                                                                                                                                   Morrison T.G., "T7 translation
                                                                                                                                                                                                                                     MEDLINE=71240788; PubMed=5283385;
                                                                                                                                                                                                                                                                 Molineux I.J.;
Submitted (NOV-1996) to
                                                                                                                                                                                                                                                                                      STRAIN-K12;
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                                                                                                                                                                                                                                                                                                                                                                                                                               Escherichia coli.
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16-OCT-2001
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Escherichia
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16-OCT-2001
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                                                                                                             European Bioinformatics Institute. The by non-profit institutions as long
                                                                                                                                                                                                                   translational
                                                                                                                                SWISS-PROT entry is copyright. It is produced through a collaboration een the Swiss Institute of Bioinformatics and the EMBL outstation
                                                                                                                                                                 CARRIES THE PLASMID
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                                                   σ89941;
                                                             AP001918;
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                                                                                 an
                     EG40053;
Complete
701
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                                                                              and this statement is not removed requires a license agreement (See an email to license@isb-sib.ch).
                                                                                                                                                                                                                                                                                                                                                                                                                                                   exclusion
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Peptidoglycan synthesis; Comp.
38774 MW; 871B82362A47315A
                      proteome.
741
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24.38;
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DQVSPFFDDWPAVEEKLKVMLSGNELTPEQEALKTALENDD
-> VTRSVRSLMTGQQSKRS (IN REF. 2).
; 4C373DF929AFCD65 CRC64;
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Pred. No. 1.
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Best Local S
Matches 75
                                                                                                                                                                                                                                                                                                                                                                                                                                                                      SEQUENCE FROM N.A. MEDLINE-90367113; P Ghosh S., Gifford A Baltimore D.;
                                                                                                                                                                                                                                       Grumont R.J., Fecondo J., Gerondakis S.;
"Alternate RNA splicing of murine nfkbl generates a nuc
of the p50 precursor NF-kappa B1 that can function as a
transactivator of NF-kappa B-regulated transcription.";
Mol. Cell. Biol. 14:8460-8470(1994).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     kappa-B
NFKB1.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               01-MAY-1992 (Rel. 22, Created)
01-MAY-1992 (Rel. 22, Last sequence update)
15-JUN-2002 (Rel. 41, Last annotation update)
Nuclear factor NF-Kappa-B p105 subunit (DNA-binding factor KBF1) (EBP-
1) (NF-kappa-B1 p84/NF-kappa-B1 p98) [Contains: Nuclear factor NF-
NEVEL 1.
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P25799;
                                                        carboxyl terminus of protein kinase A."; Cell Growth Differ.
                       SEQUENCE
                                                                                                                                                             MEDLINE=94001687;
Gerondakis S., Mo
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        Eukaryota; Metazoa;
Mammalia; Eutheria;
  MEDLINE=92191289;
                                                                                                                                               Grumont
                                                                                                                                                                                                       SEQUENCE
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  Mus musculus
                                                                                                                     "The activity of a 70
                                                                                                                                                                                                                                                                                                                                        SEQUENCE FROM N.A. (ISOFORMS P84 MEDLINE=95059075; PubMed=7969179;
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Chordata;
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                                                                                                  of
                                                                                                                                                                              71 FROM N.A., AN PubMed=8398903;
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71 FROM N.A.
PubMed=1339305;
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                       FROM
                                                             4:617-627(1993)
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Pred. No. 6.9;
80; Mismatches
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Sciurognathi; Muridae;
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'-kappa B
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          X-RAY CRYSTALLOGRAPHY (2.3 ANGSTROMS) OF MEDLINE=99081292; PubMed=9865694;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        crystal structures of the dimerization
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  X-RAY CRYSTALLOGRAPHY (2.2 ANGSTROMS) OF 245-350 MEDLINE=98046092; PubMed=9384558; Huang D.B., Huxford T., Chen Y.Q., Ghosh G.;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Ghosh G., van Duyne.G., Ghosh S., Sigle "Structure of NF-kappa B p50 homodimer Nature 373:303-310(1995).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                X-RAY CRYSTALLOGRAPHY (2.3 ANGSTROMEDLINE=95132005; PubMed=7530332;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       "Cotranslational biogenesis of NF-kappaB p50 Cell 92:819-828(1998).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              COTRANSLATIONAL FOLDING
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"I kappa B gamma, a 70 kd protein identical to
plio Nr-kappa B: a new member of the I kappa B
cell 68:1109-1120(1992).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   Chen F.E., Huang D.B., Chen Y.Q., Ghosh G.; "Crystal structure of p50/p65 heterodimer of transcription factor kappaB bound to DNA.";
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             x-ray Crystallography (2.9 angstroms) of 39-350.
MEDLINE-98111237; PubMed-9450761;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Structure
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                "The role of DNA in
                                                                                                                                                                                                                                                                                                                 SUBCELLULAR LOCATION: Nuclear, but also found in the cyt in an inactive form complexed to an inhibitor (I-kappa-B ALTERNATIVE PRODUCTS: 3 isoforms; p105 (shown here), p84 are produced by alternative splicing.
INDUCTION: By phorbol ester and TNF-alpha.
DOMAIN: The C-terminus of p105 might be involved in cyto retention, inhibition of DNA-binding, and transcription
after the GRR repeat may promote the generation of p50 mak an acceptable substrate for the proteasome. The processed active and the unprocessed form acts as an inhibitor (I ka like), being able to form cytosolic complexes with NF-kapp trapping it in the cytoplasm. Complete folding of the regi downstream of the GRR repeat precludes processing. PTM: Polyubiquitination seems to allow P105 processing. SIMILARITY: BELONGS TO THE REL/DORSAL FAMILY.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           Play a role in the regulation of apoptosis.

FUNCTION: NF-kappa-B p98 subunit (but not p84 or p105) a transactivator of NF-kappa-B is a heterodimer of an about DNA-binding subunit and the weak DNA-binding subunit p65 heterodimers might form a labile tetramer. Also interact
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 of genes involved in immune response and acute
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           retention of attached NF-kappaB proteins and generation of p50 a cotranslational processing. The proteasome-mediated process ensures the production of both p50 and p105 and preserves the independent function, although processing of NFKB1/p105 also appears to occur posttranslationally. p50 binds to the kappa-consensus sequence 5'-GGRNNYYCC-3', located in the enhancer reconsensus sequence 5'-GGRNNYYCC-3',
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            FUNCTION: Appears to have dual functions retention of attached NF-kappaB proteins a cotranslational processing. The proteas
                                                                                                                                                                                                                          in the generation of pi
PTM: While translation
                                                                                                                                                                                                                                                                              DOMAIN: Glycine-rich region (GRR)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              391:410-413(1998).
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           the weak DNA-binding subunit p65.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Sigler
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                                                                                                                                                                                                                                                                                 appears
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family.";
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                                                                                                                                                                                                                                                                                                                                                                                                                               (I-kappa-B)
here), p84
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EMBL; S66656; AAB28573.1;
EMBL; S89033; AAB21851.1;
                                                                                                                            VARSPLIC
                                                                                                                                                                                                               DOMAIN
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          or send an email to license@isb-sib.ch).
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1IKN;
GVEKACFMSHAVLWEQA-LDEGV-
                 ISLAGCLLLEGDAHVDST--
                                ISLASA--AERRAHIAATFGSRGIPFQFFDALMP----SERLERAMAELVPGLSAHPYLS
                                                                                                                                                                                                                                                                                                                                                                                    PF01833;
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                                                         Similarity
                                                                                                                                                                                                                                                                                                                                          PS50088; ANK_REPEAT;
                                                                                                                                                                                                                                                                                                                         PS50297; ANK_REP_REGION; PS01204; REL_1; 1.
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IPR000488;
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IPDPDKNWATLAQKLGLGILNNAFRLSPAPSKTLMDNYEVS
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TESLTGDSPLLSLNKMPHGYGQEGPIEGKI -> MNSGIVT
                                                                                                                                           QVHCLPLSSSSTRQHIDELRDSDSVCDSGVETSFRKLSFTE SLTGDSPLLSLNKMPHGYGQEGPIEGKI -> GT (IN
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                -TYDGTTPLHIAAGRGSTRLAALLKAAGADPLVE
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Alternative :
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                                                                                                                                                                                                                                                                                                                                                                                                                                       "Cloning and expression of transmembrane kinase with two potential transmembrane oncogene 3:571-578(1988).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Homo sapiens (Human).
Eukaryota; Metazoa; Chordata;
Mammalia; Eutheria; Primates;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              Proto-oncogene (EC 2.7.1.112)
           Mulligan L.M., Kwok J.B.J., Healey C.S., Elsdon M.J., Gardner E., Love D.R., Mole S.E., Moore J.K., Papi L., Telenius H., Tunnacliffe A., Ponder B.A.J.;
                                                                                                                                                                                                                                                                                                                                                                                                              SEQUENCE OF 588-1063 FROM N.A. MEDLINE-87257826; PubMed-3037315;
                                                                                                                                            VARIANTS MEN2A/MTC W-611; S-618; MEDLINE-93372843; PubMed-8103403;
                                                                                                                                                                                 hirschsprung disease.";
Hum. Mutat. 9:97-109(1997).
                                                                                                                                                                                                       "Mutations of the RET proto-oncogene in the multiple endocrine neoplasia type 2 syndromes, related sporadic tumours, and
                                                                                                                                                                                                                                                                                                                  Hofstra R.M.W.,
                                                                                                                                                                                                                                                                                                                                                                                                    MEDLINE-87257826;
Takahashi M., Coop
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    NCBI_TaxID=9606;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      RET
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       RET_HUMAN
                                              WARIANTS G-618; 632-DVR-634; G-634; MEDLINE-93275414; PubMed-8099202;
                                                                                                           "Mutations
                                                                                                                      Donis-Keller H., Dou S., Chi D., Carlson K.M., To Lairmore T.C., Howe J.R., Moley J.F., Goodfellow
                                                                                                                                                                                                                                MEDLINE-97220587; p
Eng C., Mulligan L.
                                                                                                                                                                                                                                                        REVIEW ON VARIANTS.
                                                                                                                                                                                                                                                                                          the phenotype.
                                                                                                                                                                                                                                                                                                     "Mutations in Hirschsprung
                                                                                                                                                                                                                                                                                                                             MEDLINE-98023959;
                                                                                                                                                                                                                                                                                                                                           REVIEW ON HSCR VARIANTS
                                                                                                                                                                                                                                                                                                                                                                             tyrosine kinases.
                                                                                                                                                                                                                                                                                                                                                                                        "ret transforming
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             SEQUENCE OF 255-1114 FROM N.A.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    Oncogene 4:805-806(1989)
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           "Isolation of ret
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      Takahashi M.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  MEDLINE-89282215;
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01-JUN-1994 (Rel.
15-JUN-2002 (Rel.
   Germ-line
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      AEQFLAEDTWLQ-
                                                                                                                                                                                                                                                                                                                                                                                                                                                             i M., Buma Y., Iwamoto T., Inaguma Y., Ike
and expression of the ret proto-oncogene
ith two potential transmembrane domains.";
   mutations
                                                                                                             the
                                                                                                                                                                                                                                                                                                                                                                                                    Cooper G.
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               tyrosine-protein kinase receptor ret (C\text{-ret}).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       STANDARD;
                                                                                                                                                                                                                                                                                                                  Osinga J.,
                                                                                    2:851-856(1993)
                                                                                                                                                                                                                                                                                                                                                                7:1378-1385(1987).
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            08, Created)
29, Last sequence update)
41, Last annotation update)
                                                                                                                                                                                                                                                                                                                 PubMed=9359036;
einga J., Buys C.
                                                                                                                                                                                                                                             PubMed=9067749;
                                                                                                                                                                                                                                                                                                                                                                                        gene encodes a fusion
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                PubMed-3078962;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         proto-oncogene
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 FROM N.A.
PubMed=2660074;
                                                                                                                                                                                                                                                                               5:180-185(1997).
                                                                                                           proto-oncogene
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                                                                                                                                                                                                                                                                                                     Buys C.H.
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 proto-oncogene
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                                                           F-634;
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  Stelwagen T., Luo Y., rasama F., Stelwagen T., Luo Y., Romeo G., Lips C.J.M., Buys C.H.C.M.;

"A mutation in the RET proto-oncogene associated "A mutation normalism at type 2B and sporadic medullar
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Romeo G., Ronchetto P., Luo Y., Barone V., Seri
Pasini B., Bocciardi R., Lerone, Kaarlainen
"Point mutations affecting the tyrosine kinase
proto-oncogene in Hirschaprung's disease.";
                                                                                               endocrine neoplasia
carcinoma.";
                                                                                                                                                                                                                  "Diverse phenotypes proto-oncogene.";
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Robinson B.G., Frilling A., Verellen-Du
Venter D.J., Munnich A., Ponder B.A.J.;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         Schuster M.K., Browden D.W., Mao J.-I. Schuster M.K., Browden D.W., Mao J.-I. "Germline RET mutations in MEN 2A and simple DNA diagnostic tests."; Hum. Mol. Genet. 3:635-638(1994).
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MEDLINE=94159103; PubMe
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C., Modigliani E., Lenoir G.M.;
O-oncogene mutations in French MEE
Genet. 3:1939-1943(1994).
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neoplasia type 2A."; Nature 363:458-460(1993) Nagai G.F., kinase Kristoffersson U., neoplasia o G., Ro s: Bocciardi M.A., Healey Jackson C.E., Q-897; G-972 AND L-973 R-620; Moore domain of mutations type F-634; S '.≂ .∵ the 2B a Ceccherini C.S., Tunnacliffe G-634 and in Larsson L.T., Hirschsprung related ?

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Carlson K.M., Dou S., Chi D., Scavarda N., Toshima K., Jackson C.E.,
Wells S.A. Jr., Goodfellow P.J., Donis-Keller H.;
"Single missense mutation in the tyrosine kinase catalytic domain of
"Single missense mutation in the tyrosine kinase catalytic domain of
the RET protooncogene is associated with multiple endocrine neoplasis
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Edery P., Lyonnet S., Mulligan L.M., Pelet A., Dow E., Abel L.,
Holder S., Nihoul-Fkete C., Ponder B.A.J., Munnich A.;
"Mutations of the RET proto-oncogene in Hirschsprung's disease.";
Nature 367:378-380(1994).
                                                                                                                                    VARIANT FMTC ASP-768.
MEDLINE=95148221; PubMed=7845675;
Eng C., Smith D.P., Mulligan L.M.
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MEDLINE=96090258; PubMed=7581377;
MILITE T., Pelet A., Edery P., Eng C., Mulligan L.M., Amiel J.,
Boutrand L., Beldjord C., Nihoul-Fekete C., Munnich A., Ponder
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"Germline mutations of the RET proto-oncogene in eight Japanese patients with multiple endocrine neoplasia type 2A (MEN2A).";
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"Analysis of RET protooncogene point mutations distinguishes heritable from nonheritable medullary thyroid carcinomas.";
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                                                                                                                                                                                                                                                                                                                                                                "Diversity of RET proto-oncogene mutations in familial and sporadic Hirschsprung disease.";
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Takami H., Hikiji K., Nakamura Y.;
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MEDLINE-96121602; PubMed-8595427;
Kitamura Y., Scavarda N., Wells S.A. Jr., Jackson
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Q9EVD4;
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Q1-MAR-2001 (TrEMBLrel. 16
f 01-MAR-2001 (TrEMBLrel. 1f
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      Neisseria
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SEQUENCE 248 AA;
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Bacteria; Proteobacteria;
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Q93EK5;
Q1-DEC-2001
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                                                                                                                                                                       Zhu P., Klutch M.J., Tsai C.-M.;
"Genetic Analysis of Conservation and Variation of Lipooligosaccharide Expression in Two L8-Immunotype Strains of Neisseria meningitidis.";
FEMS Microbiol Lett. 203:173-177(2001).
EMBL; AF355193; AAL12841.1;
Interpro; IPR002654; GT_25.
Pfam; PF01755; Glyco_transf_25; 1.
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EMBL; AF240672; AAG09765.1; -. InterPro; IPR002654; GT_25.
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                                                                                           Score 1241; DB 2;
Pred. No. 1.6e-105;
7; Mismatches 17;
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Pred. No. 1.9e
9; Mismatches
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                                                                                                                                                                                                                                                                                                                                                                  subdivision;
                                                                                                                                                        A73037E0625EE7B3 CRC64;
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Q93PT
ID Q93P
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DF 01-D
DF 01-M
DF 61-Y
GN LGTY
GN LGTY
GN NALS
OC Bact
OC Bact
OX NOBI
RN [1]
RP SEQUE
RC STRA
RA TONG
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Matches 224
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Submitted (OCT-2000) to the EMBL/(EMBL; AF313394; AAK70340.1;
InterPro; IPR002654; GT_25.
Pfam; PF01755; Glyco_transf_25; 1
Q9REX4;
Q9REX4;
01-MAY-2000
01-MAY-2000
01-MAR-2002
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Bacteria; Proteobacteria;
NCBI_TaxID=485;
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19; Mismatches 24:
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IGTE.
Neisseria gonorrhoeae.
"-~teria; Proteobacteria; b
                                                                                                                                              STRAIN-1291;
MEDLINE-2035049; PubMed-10844691;
Harvey H.A., Porat N., Campbell C.A.,
Phillips N.J., Apicella M.A., Balke M.
"Gonococcal lipooligosaccharide is a l
receptor on human sperm.";
Mol. Microbiol. 36:1059-1070(2000).
EMBL; AF121135; AAF14363.1;
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01-MAY-2000
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STRAIN=FA19;
Balthazar J.T., Shafer
"Mutations in the lgt c
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                                                                                               Transferase
                                                                                                         InterPro; IPR002654; GT_25.
Pfam; PF01755; Glyco_transf_25;
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Bacteria; Proteobacteria;
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210; Conserv
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71.9%;
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Score 1002.5; DB 2; Pred. No. 1.1e-83; 3; Mismatches 40;
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MEDLINE-21467954; PubMed-11583844;
Zhu P., Klutch M.J., Tsai C..M.;
"Genetic Analysis of Conservation and Variation of Lipoc Expression in Two L8-Immunotype Strains of Neisseria meners Microbiol. Lett. 203:173-177(2001).

EMBL; AL162753; CAB83819.1; -.
EMBL; AR355194; AA112844.1; -.
InterPro; IPR002654; GT_25.
Pfam; PF01755; Glyco_transf_25; 1.
                                                                                                                                                                                                                                                                  Complete SEQUENCE
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     SPECIES=N.meningitidis (serogroup A);
STRAIN=Z2491 / SEROGROUP A / SEROTYPE 4A;
MEDLINE=20222556; PubMed=10761919;
                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          Neisseria meningitidis (serogroup A),
Neisseria meningitidis.
Bacteria; Proteobacteria; beta subdivi
NCBI_TaxID-65699, 487;
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"The genetic basis of the phase variation repertoire lipopolysaccharide immunotypes in Neisseria meningiti Microbiology 145:3013-3021(1999).
EMBL: U65788; AAB48387.1;
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MEDLINE-20055626; PubMed-10589709;
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Pfam; PF01755; Glyco_transf_25;
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Matches 191
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                                     Zhu P., Klutch M.J., Tsai C.-M.;

Zhu P., Klutch M.J., Tsai C.-M.;

"Genetic Analysis of Conservation and Variation of Lipooligosaccharide Expression in Two L8-Immunotype Strains of Neisseria meningitidis.";

FEMS Microbiol. Lett. 203:173-177(2001).

EMBL; AF35519; AALI2842.1;

InterPro: IPR002654; GT_25.

Pfam; PF01755; Glyco_transf_25; 1.

SEQUENCE 280 AA; 32898 MW; 504256FF55D92F97 CRC64;
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01-DEC-2001
01-MAR-2002
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Galactosyl t
LGTE.
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Bacteria; Proteobacteria;
NCBI_TaxID=487;
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Bacteria; Proteobacteria;
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Analysis of lipooligosaccharide biosynthesis
J. Bacteriol. 183:934-941(2001).
                                                                                                                                                     MEDLINE=21467954; PubMed=11583844;
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18; Conservative
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Pred. No. 3.5
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Bacteria: Proteobacteria;
Haemophilus
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SEQUENCE 266 AA;
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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             Pettigrew M.M.,
"Identification
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Pred. No. 4.4e-35;
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                                                Wu Y., McQuiston J.H., Cox A., Pack T.D., Inzana My Y., McGuiar cloning and mutagenesis of a DNA loculational control of the c
                                                                                                                                                                                                                                                              SEQUENCE FROM N.A.
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InterPro; IPR002654;
Pfam; PF01755; Glyco.
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                                                                                                                                                                                                                                                                                  May B.J., Zhang Q., Li L.L., Paustian M.L., Whittam "Complete genomic sequence of Pasteurella multocida Proc. Natl. Acad. Sci. U.S.A. 98:3460-3465(2001).
EMBL; AE006155; AAK03225.1; -.
                                                                                                                                                                                                                                                                                                                                                                                                                             Hypothetical PM1141.
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SEQUENCE 282
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May B.J., Zhang Q., Li L.L., Paust
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                                             LAGEELMVYQLSPALCIQEL --
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                                                                                                                                                                                       sh 23.9%;
l Similarity 37.3%;
82; Conservative '
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